THE AUTOMOBILE

WEEKLY | NEW YORK—THURSDAY, MAY 30, 1907—CHICAGO | 10 CENTS

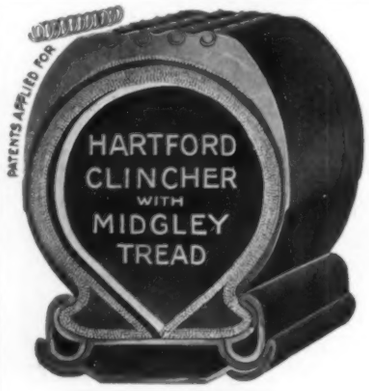
MANY ARE MEASURED BY ONE

In lamp making, as in many things, there is a standard by which all others are measured — and that standard has ever been the Gray & Davis product.

Our name has been a guarantee to dealer and consumer alike that honest quality and skilled workmanship would be found in most perfect combination in every product bearing the Gray & Davis name.

That reputation is worth more to us than the price of many lamps, and it becomes to you, and to every user of our goods, an unquestioned, unchanging guarantee of satisfaction.

GRAY & DAVIS, Amesbury, Mass.



Safeguarded by the Midgley Tread

the new, effective, non-skid device built right in the tire

Your car is equipped for regular or emergency service as it could not be equipped in any other way.

By a simple reversal, the detachable ring of the Midgley Universal Rim will take either a Dunlop or Clincher Tire of corresponding size.

Let us send you special booklet telling all about it, including "Clinchers" in "millimeter sizes," for the perfect fitting of rims on all types of foreign cars. Or call at any branch or agency for inspection and a demonstration.

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The Celebrated CHELSEA AUTO CLOCKS

In "Round" Cases.

2¾ in. Auto Clock, $26
3⅛ in. " " 28
3⅛ in. Motor Clock, 24

8 Day High Grade Clocks

"BEST in the WORLD"

Clocks built with a view to stand the jars and jolts and rough riding of Automobiles. Reputation the highest.

☞ The "SPECIAL" Grades viz: (Design of case patented Dec. 19, 1905.)
2¾ in. "SPECIAL" Auto Clock, $36
3⅛ in. "SPECIAL" " " $45
3½ in. "SPECIAL" Motor Clock, $41

YOU Own a Good Motor Car? BUY THE BEST CLOCK.

The sizes are the approximate diameter of the Dials. All are in Duplex (patent applied for) Polished Car. Brass Cases, the most thoroughly waterproof case on the market. The "Specials" show dial on angle; its clock when removed from outer (locked) case is excellent for use on mantels, bureaus, etc. Outer case secured to dashboard by hidden screws. The 3 1-2 inch motor clock is a strong, reliable clock, but the auto clocks have a somewhat finer train. You want the BEST? Ask for the "CHELSEA."

Chelsea Clock Co.

16 STATE STREET BOSTON

Makers of Exclusively 8 Day High Grade Ship's Bell Clocks, Marine Clocks and Auto Clocks.
MORGAN & ALLEN CO., 717 Market St., San Francisco, Sales Agents for the Pacific Coast
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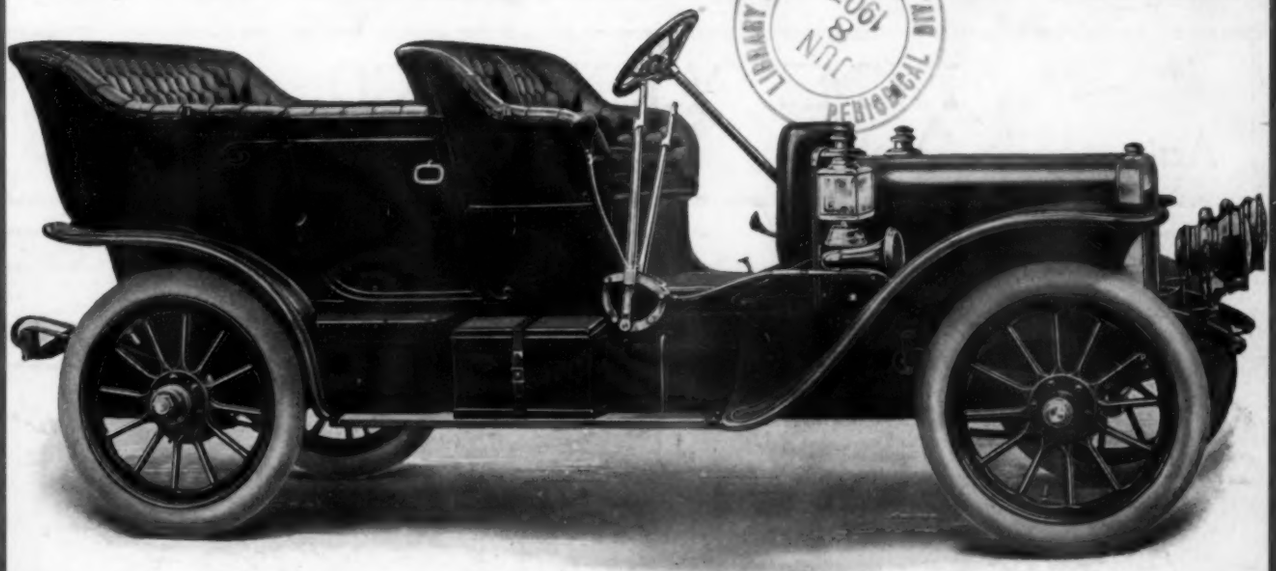
THE AUTOMOBILE

WEEKLY NEW YORK—THURSDAY, JUNE 6, 1907—CHICAGO 10 CENTS

WINTON



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A REMARKABLE PERFORMANCE

is reported by Messrs. A. J. P. Bertschy and George Bertschy, of Reno, Nevada.

"On April 20th," they write, "we purchased at small cost a two-cylinder 1904 Winton that had stood outside a local garage unused and exposed to the weather for nearly a year. We spent just three hours putting on new tires, oiling her up and making adjustments, and when that work was finished we steered her out of the harbor under her own power. Samuel Fellows made her third passenger.

"We planned to run to some of the new mining camps, and in the first 60 miles passed three four-cylinder cars that were out of commission on account of the heavy roads.

"At Boyer's Ranch we were informed that we could not reach the divide, that no automobile had ever done so. The climb to the top is 12 miles, and over Cobalt mountain, a raise of 6,600 feet. The buckboard stage that makes this trip uses four horses. Nevertheless we kept on going. At one point we climbed 68 feet in 200. News of our coming was wired ahead, and at Lovelocks, our objective point, we were surrounded by a betting crowd that had freely waged money on our chance of success. At Kitten Springs a local photographer took our picture for use on a mailing card, inscribing it, 'The first auto from Fairview to Lovelocks.'

"To have accomplished an 'impossible' performance was certainly creditable, but to think that we made the trip with a discarded two-cylinder Winton simply goes to show that Winton durability is the most emphatic reality in the automobile world."

Perpetually good—that's about the only way to describe the Winton.

30-H. P. Type X-I-V, $2,500. 40 H. P. Model M, $3,500.

Both models supplied with runabout, limousine or landaulet bodies.

The Winton Motor Carriage Co., MEMBER A. L. A. M. **Cleveland, O., U.S.A.**

We conduct our own Branch Sales Depots in New York, Boston, Philadelphia, Pittsburg, Chicago, Detroit and London.

Automobile Bodies and Tops

ALL STYLES AND SIZES
...IN...
LIMOUSINE
LANDAULETTE
TOURING and
RUNABOUT
BODIES

BUILT TO ORDER
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In soliciting your business we are placing at your disposal the knowledge and experience of the past thirty years in the building of high-grade work, which, with progressive and up-to-date methods, is a guarantee of the high standard that will be maintained in our Automobile Body and Top Department.

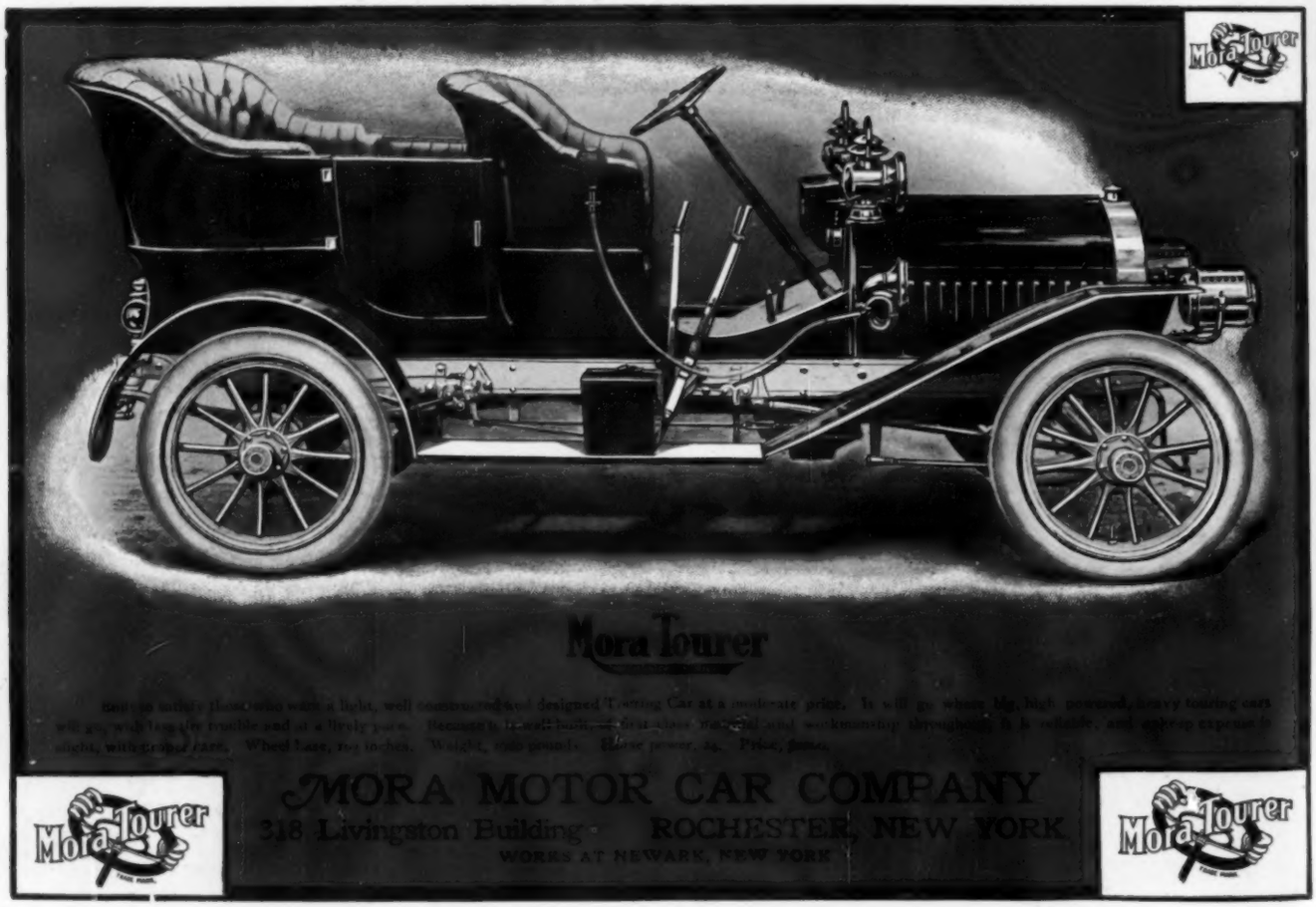
SEND SPECIFICATIONS AND LET US QUOTE PRICES

All our Tops are made of the highest grade Leather, Imported Twills, Pantasote, Government Khaki, etc., etc.

BUILT TO ORDER TO
FIT ANY CAR

HUME CARRIAGE CO.

Automobile Dept. **AMESBURY, MASS.**



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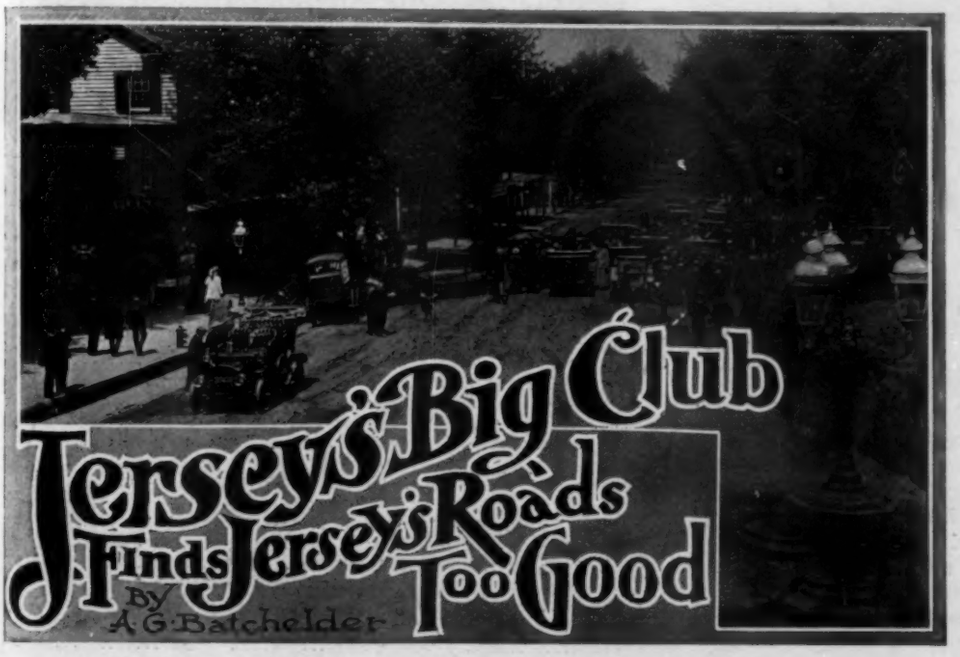


Jersey's Big Club Finds Jersey's Roads Too Good

By A. G. Batchelder

A TYPICAL NOONDAY CONTROL—THIS ONE WAS AT FREEHOLD, N. J.

FOR three days the New Jersey Automobile and Motor Club required the participants in its endurance test to keep moving from early morn until late afternoon, but the conclusion found a dozen cars with perfect scores, several with minor losses of points, and only three obliterated from the 26 participants.

Of these, 14 belonged in the touring car class and contended for the possession of the William C. Shanley trophy. Seven survived flawlessly: Matheson, Stoddard-Dayton, Oldsmobile, Grout, National, Knox, and Winton. Incidentally the big National kept its hood on during the entire three days.

In the runabout brigade five of a dozen remained at the head of the class: Stoddard-Dayton, Corbin, Buick, Jackson, and Dragon, the latter handled by the experienced John Haynes and also having come from the factory without the semblance of an innings of testing—green and unlimbered.

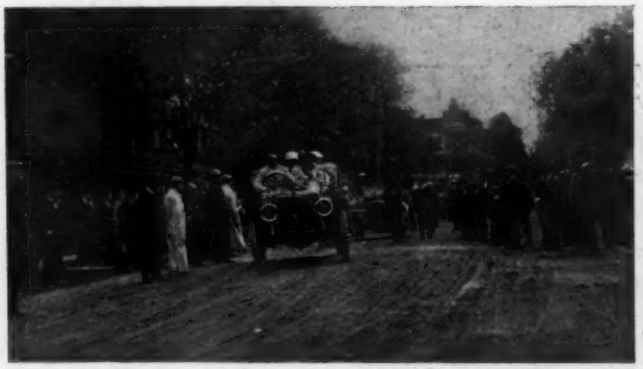
It must be confessed that New Jersey's roads average exceedingly well, and, in fact, it is difficult at the present time, while observing the legal limits of speed, to give the present day automobile a question that it cannot successfully answer. Several years ago it certainly would have been another story.

On the first day of the Jersey event the motor-driven vehicles were asked to make the climb of Schooley's Mountain, and none faltered in making the ascent. On to Hackettstown the stone roads were excellent, and the route continued good to Washington, which served as the noon control and replenishing place both for man and machine. Between Washington and Somerville the road was a disgrace to the State Highway Commissioner, but from Somerville back to Newark nothing better could be asked for. The predicted rain failed to materialize, and the day's work summarized found only two missing of the 26 that started in the morning on the 121.9 miles circuit. This was on Decoration Day, which, being a holiday, found the people along the route in a receptive mood for the motor army.

From Newark to Atlantic City via Trenton stretch 154 miles of rattling fine road, and really it was so easy on Friday that it seemed a shame to consider that the task represented by many degrees what might be expected of the up-to-date automobile. Of course, President Walter E. Edge, Chairman Harry Cook, Secretary Johnston, and other members of the Atlantic City Automobile Club, in company with Mayor Stoy, were on hand to give greeting to Chairman Horace A. Bonnell and the pleasure party from Newark, for the day's run had been of the most enjoyable sort. Perhaps more so to the occupants of the non-schedule-following Frayer-Miller press car, handled expertly, even if occasionally somewhat recklessly, by Raymond Joo, who, I fear, at times slightly exceeded 20 miles an hour.

The return to Newark on Saturday was via Toms River, Lakewood, Freehold, and New Brunswick—139.5 miles—and it was just as thoroughly satisfactory and as completely within the power of the cars as on the previous two days. There were stretches of road with houses few and far between, which made one realize very keenly what a good Vanderbilt Cup course could be obtained in the confines of the "Mosquito State." But we saw no mosquitoes, possibly owing to the fact that the weather was a bit nippy but distinctly bracing for automobiling. Truly it must have been somewhat irritating for the contestants to observe the exact letter of the law on those long stretches of highway where nothing moving was encountered except the auto in front that gave you its annoying dust.

BONNELL, DIRTY BUT VISIBLY HAPPY.



"JACK" MASON, ONE OF THE STODDARD-DAYTON PILOTS.

C. H. PECKWORTH WITH A LOAD OF KNOX TRAVELERS.

But we of the "press car," unshackled and taking advantage of the situation, passed the whole line, not once but repeatedly. There was Ralph Owen, he of Florida pathfinding fame, complacently jogging along with his Oldsmobile, in the tonneau of which were R. A. Greene and other subdued scorchers. Boland's big National was an unwilling monster held in leash, and "Jimmy" Ryall regretfully kept his Matheson in subjugation. "Dick" Newton, with Mrs. Newton pluckily occupying the rumble seat of the runabout—the observer being alongside the driver—pretended to be pleased with the leisurely pace, and John Haynes, of Vanderbilt Cup notability, waved a smiling salutation, though he must have itched to give his Dragon its head as we flew along. "Jimmy" Ferero, the kid of the run, handled the larger Matheson with a skill that evoked chunks of admiration from hundrds of youngsters, who enviously watched him with wistful eyes. "Jack" Mason had a hard struggle to keep his Stoddard-Dayton in check, and there were a dozen others who suffered similarly. Now and then there would be a burst of speed, but the offender knew that it would mean a funereal pace for him in the last mile before the end of the control, and this thought soon cured the contestants of any "speedstorm."

Infrequently we would run across Chairman Wiss and his Packard, which was a signal for our impatient driver to attempt a demonstration of air-cooling. Since we had a little more horsepower and our pilot had less regard for the law, it usually meant that our next mark was on ahead in the shape of the Thomas car containing Committeemen Wood, Kimber, and Cook, but because it was necessary for them to stop frequently to place road signs, they hardly gave us a run for our money. Vice-President Shanley, donor of the touring car cup, on the previous day had come in contact with a ditch which placed his Mercedes *hors du combat*, but in some miraculous manner the worst that befell us was a couple of tire punctures. Yes, the Frayer-Miller had speed to burn, and a good share was burned.

One of the features of the run was the Holsman, which completely answered the description of a horseless carriage in the minds of the public, and its appearance was ever a source of deep interest to the farmers who viewed the auto procession. Though it accumulated a loss of points, the total was exceedingly meager, and on the concluding day it reached the finish line half a minute too early.

TOURING CAR CLASS FOR W. C. SHANLEY TROPHY.

Car.	Entrant	Driver	Points Lost.
Matheson	J. D. Ryall	James Ferero	0
Stoddard-Dayton	J. W. Mason	J. W. Mason	0
Oldsmobile	R. A. Greene	Ralph Owen	0
Grout	P. H. Johnston	P. H. Johnston	0
National	F. E. Boland	F. E. Boland	0
Knox	C. H. Peckworth	C. H. Peckworth	0
Winton	C. S. Calvert	C. S. Calvert	0
Maxwell	J. W. Mason	Arthur Durham	3
Autocar	P. H. Seery	Clarence Fisher	10
Thomas Forty	Geo. Paddock	Geo. Paddock	15
Dragon	Henry Setlow	Henry Setlow	50
Cadillac	W. V. Snyder, Jr.	James Ward	193
Dolson	W. H. Fulper	W. H. Fuller	D.O.
Corbin	H. J. Koehler	F. L. Apgar	D.O.

RUNABOUT CLASS FOR ANGUS SINCLAIR TROPHY.

Car.	Entrant.	Driver.	Points Lost.
Stoddard-Dayton	R. T. Newton	R. T. Newton	0
Corbin	H. J. Koehler	J. F. Corbett	0
Buick	H. J. Koehler	M. F. Atgar	0
Jackson	C. W. Oathout	C. W. Oathout	0
Dragon	Henry Setlow	John Haynes	0
Knox	W. H. Ellis	W. H. Ellis	3
Maxwell	J. W. Mason	L. R. Hunt	7
Hewitt	Dr. J. F. Bell	Dr. J. F. Bell	21
Matheson	J. B Ryall	W. D. Gifford	48
Holsman	S. W. Case	S. W. Case	56
Reo	A. J. P. Pionnie	Fred Stowers	84
Rambler	C. E. Beach	C. E. Beach	D.O.

JOHN HAYNES WITH THE DRAGON, FRESH FROM THE FACTORY.

THE SEASIDE, ATLANTIC CITY, WHERE THE PARTY RESTED.

Of course, it will not be possible to divide the Shanley trophy into seven parts, nor saw the Sinclair cup into five pieces. Therefore it has been suggested that the names of the winners in each class be engraved on the trophies and certificates be given to the clean score performers. Possibly the two sets of tied contestants may be assembled and a vote taken as to their wishes.

The three-day affair reflected much credit upon the endurance contest committee, and while Chairman Bonnell carried the bulk of the burden he was capably assisted by Committeemen Wood, English, Shanley, Kimber, Wiss, and Cook.

The total mileage of the three days was 415, and the schedule was carefully figured out and made to conform exactly with the requirements of the law. While rainy weather might have interfered to some extent with the most excellent showing, it is pretty good guessing that the tied cars might have been as numerous, for, as has been remarked before, the Jerseymen know the value of good roads, and they have been building them for some years.

RALPH OWEN, THE OLDSMOBILER.

THE BIG SIX-CYLINDER NATIONAL PASSING THROUGH A CONTROL.

Observing to the letter the present —but some day to be obsolete— speed limits, it would appear to be practically impossible to evolve an eliminating endurance run over as many miles of Jersey road as can be traveled between sunrise and sunset by most autos.

FRAYER-MILLER "PRESS" CAR, WHICH ENJOYED THE FINE ROADS UNHAMPERED BY SCHEDULES

WHAT THE OFFICE OF PUBLIC ROADS IS DOING.

YOUTHFUL MATHESON "JIMMY" FERERO.

WASHINGTON, D. C, June 1.—Logan Waller Page, director of the Office of Public Roads, has given THE AUTOMOBILE corerspondent an outline of his plans and recommendations for 1908. While the object-lesson method has been in use for some time by the office, it is hoped by Mr. Page and his associates that by the next fiscal year the effectiveness of this branch of the work may be increased by emphasizing the educational part of the work and increasing the mechanical facilities. To do this it will be necessary for the Government to own the road machinery and have such transportation facilities as to permit an accurate schedule to be followed in carrying on work at different places. A plan will then be put into operation by which all of the road overseers in a given county will participate in the object-lesson work at stated times, and a series of practical lectures setting forth the elementary principles governing road construction, as applied to the particular locality in question, will be delivered during the construction of each object-lesson road. An estimate has been made for eight additional engineer students. The benefit, both to the government and to the individual student, are so decided as to justify increasing the scope of the work as far as possible.

NATIONAL GOOD ROADS BODY PROPOSED.

A movement is on foot for the formation of a strong national association to deal with the good roads problem, incorporating all existing associations paying any attention to this matter. A preliminary meeting was held last Tuesday at the offices of the National Association of Licensed Automobile Manufacturers, attended by representatives of the A. L. A. M., A. A. A., A. C. A., American Motor Car Manufacturers' Association, and the National Association. Only routine work was done, but it was decided to call a representative meeting at the same place on June 27. There is entire unanimity on the proposition to form a strong representative body, which would be infinitely more powerful than the numerous associations at present working individually on this question.

HOW THE LONG ISLANDERS TRIED OUT THE AUTOS

By W. F. Bradley

SPEEDING ALONG THE ROAD THAT SKIRTS THE SHINNECOCK HILLS—CANOE PLACE INN AT THE RIGHT.

"A GOOD machine that is certain to finish?" repeated the Long Island Automobile Club official.

"Take the Pope-Hartford; Mr. Arnold will be sure to come through with a good score."

Three minutes later the red machine from Connecticut, with C. G. Arnold at the wheel, a speed-loving architect beside him, and the tonneau occupied by an enthusiastic tire man and a breakfastless representative from THE AUTOMOBILE, was running down Cumberland street, Brooklyn, leaving a round dozen cars to follow in its rear.

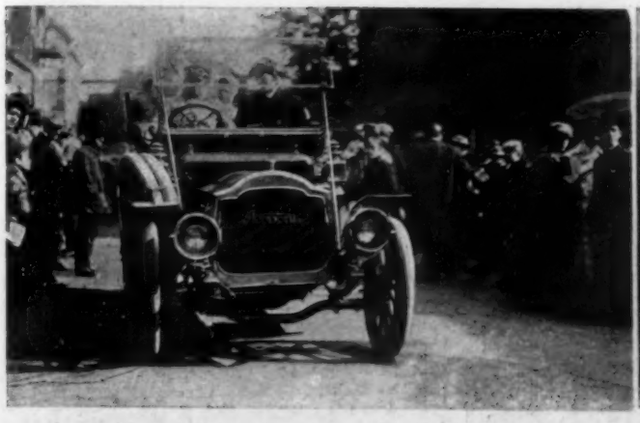
It was an easy matter to select a car that would finish, and finish without a black spot against it, for of the twenty autos that set out for the club's endurance run only a sprinkling fell by the roadside. To select the one that would comply with all the conditions of the test and finish the run ahead of all competitors in its own and higher classes displayed an acumen on the part of that official which many a racing man would give his shirt to possess. Out through the Plaza, Eastern Parkway and Highland Park the police had not got up, but they had rolled a few boulders into the middle of the highway as a friendly invitation to the autoist that he might speed round them if he wished. It is an excellent idea for obtaining a vicarious service and reflects credit on the bicycle "cop." When Flushing had seen our tail number the Pope-Hartford began to stretch out to such an extent that the "fifteen an hour" which the regulations demanded appeared as if framed for a cross-town horse-car. Columbia, Aerocar, Thomas, Queen and Olds, in our own class, and Cadillac and Maxwell in Class A, were successively left behind by the Pope-Hartford and its strenuous driver. The last to be overtaken was the Holsman buggy, an early starter which had plodded along with remarkable regularity.

WHERE A BREAKDOWN WOULD HAVE BEEN AWKWARD.

Down Manhasset hill, where the two-wheelers were preparing for their onslaught on speed records, through Roslyn, Glen Cove, Oyster Bay, Cold Spring Harbor, Northport, Stony Brook, then a sharp dip down into Port Jefferson, where our early arrival caused us some difficulty in finding the Miss Smith who had been delegated to feed the troupe. After running right through the village, returning, and taking the ubiquitous small boy on board as official guide, Miss Smith's hotel was discovered where it would have been found at first glance had we not been too eager to arrive first. Hardly had the Pope-Hartford checked in than the Olds, the Thomas, the Cadillac and a number of others lined up. When the hurried lunch had been disposed of and the first arrival was ready to resume its run eastward, all had arrived within the regulation time except F. Rockliff's Aerocar. Rough handling when hard pressed by an inconsiderate buggy driver had caused a smash-up of the transmission and a forced abandonment of the contest when it was barely begun.

We were badly placed for observing the afternoon run. The leading car, our driver was determined to retain his position of honor and left no opportunity of lingering over the beauty spots or going softly where the highways were abandoned for the dirt roads. The route was direct east by Wading River, Riverhead, Mattituck, and Southold to Greenport, where the Pope-Hartford made its first stop of seven minutes to fill up with gasoline and lubricating oil.

Out to Orient Point was a wild rush in which the chickens suffered. The checker was shaving upstairs when we ran into his rear garden, and it was five minutes before he dropped the lather brush to sign the control card. When we turned westward again for the night control at Greenport the most formidable of the competitors, Oldsmobile, Thomas and Columbia, had crept nearer and



AEROCAR STARTING ON THE TWO-DAY RUN.

AIR-COOLED FRANKLIN REACHING GREENPORT.

were passed by us between the two towns. At 1:52 we were checked in at Hedges garage, Greenport, the 139 miles having been covered in 4:51:7. When the others arrived and times were compared, the Pope-Hartford had to abandon its proud position to its half cousin, the Pope-Toledo, which finished in 4:03. Twenty had started out from Brooklyn; nineteen had finished, all of them well within the time limit allowed, and quite a number with clean scores. Their names are:

CLASS A, COSTING UP TO $1,500, 12 MILES AN HOUR.

Holsman, 10-horsepower; driver, W. J. Hunt.
Cadillac, 10-horsepower; driver, J. D. Rouk.
Maxwell, 16-20-horsepower; driver, I. C. Kirkham.

CLASS B, COSTING $1,500 TO $3,000, 15 MILES AN HOUR.

Pope-Hartford, 30-horsepower; driver, Chas. G. Arnold.
Oldsmobile, 40-horsepower; driver, R. E. Pardee.
Thomas, 40-horsepower; driver, W. H. Bower.
Queen, 30-horsepower; driver, A. D. Corwin.
Aerocar, 40-horsepower; driver, A. M. Robbins.
Columbia, 28-horsepower; driver, E. H. Barnum.
Haynes, 30-horsepower; driver, John Sieber.
Franklin, 20-horsepower; driver, R. G. Howell.

CLASS C, COSTING $3,000 UP, 18 MILES AN HOUR.

Pope-Toledo, 50-horsepower; driver, A. N. Wilcox.
De Luxe, 50-60-horsepower; driver, Chas. Beach.
Matheson, 40-horsepower; driver, R. G. Kelsey.
Packard, 30-horsepower; driver, S. H. Burns.
Pierce Arrow, 40-50-horsepower; driver, A. B. Coles.
Dolson, 60-horsepower; driver, F. A. Cole.
Welch, 50-horsepower; driver, E. L. De Camp.
Winton, 40-horsepower; driver, C. A. Carlson.

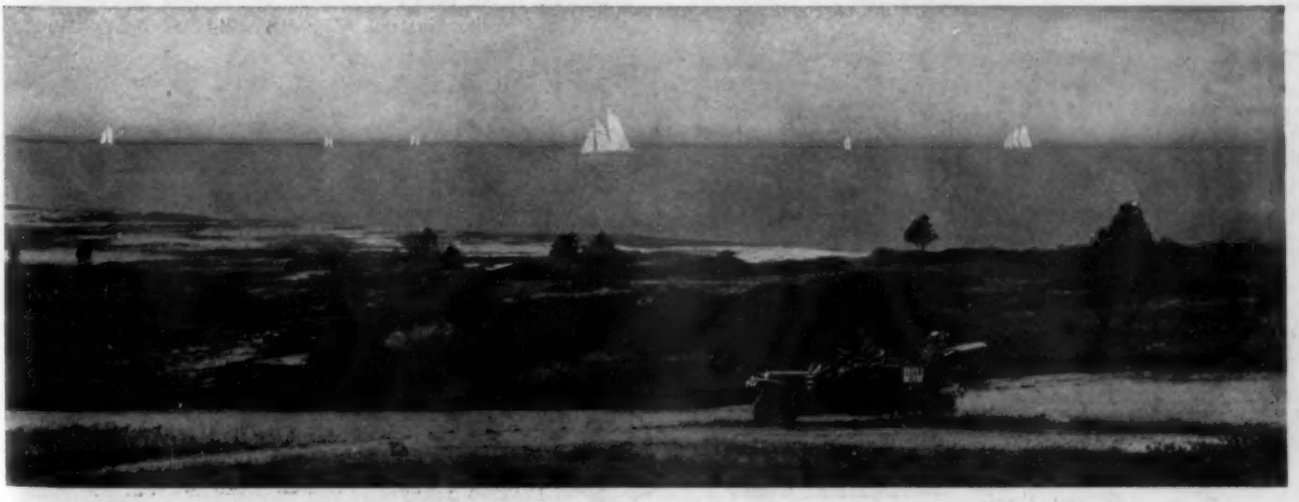
Stories over drinks failed to bring any more exciting incidents to light than the sinking of R. G. Kelsey's car into the sand near Fort Salonga, from which position it was rescued by the Welch; the carrying away of a couple of carriage wheels by R. G. Howell's Franklin, and a might-have-been upset of the Pierce and the Columbia when avoiding other users of the road.

The Homeward Second Day's Journey.

All observers were turned round before the homeward journey began on the following morning, to the delight of those who were dissatisfied with their machines and the regret of those who would leave well alone. In place of the tire magnate, the Pope-Hartford had been given a short-legged Standard Oil potentate as official observer, who smiled approvingly when the speed was moderate in the villages and scowled ferociously when his length, or lack of it, prevented him wedging in securely for the frequent wild runs.

Class B was closely bunched for the first fifteen miles, and we were at least half a dozen who ran into Southold together, where a U. S. official watched the snail crawl, watch in hand. Another half hour and they were all shaken off but the Olds runabout, which hung persistently on our heels. On the dirt road leading to East Quogue the persistent Holsman was passed. The Maxwell, a hundred yards further ahead, could not be got round for ten minutes, owing to the impossibility of finding sufficient width in the hedged-in track.

Over the Shinnecock Hills to Southampton was a magnificent ride with roads that gave sufficiently easy running at fifty an hour to enjoy the beauties of sea and land. Near Bridgehampton's liberty pole the checker recorded the time and the eastward run was begun again with the Shinnecock Inn as noon checking point. There was an exciting little struggle on the moor near the checking station between the Pope-Hartford and



WINTON ON THE SHINNECOCK HILLS, WHERE GOOD ROADS AND FINE VIEWS CHARM THE TRAVELER.

PERSISTENT HOLSMAN WAS A FEATURE.

CLEAN-SCORE POPE-HARTFORD.

MAXWELL, AN EX-GLIDDENITE.

the little Cadillac. Twice the small machine took the lead owing to the Hartford getting on the wrong track, and when the station was reached there was only a difference in our favor of one second, ignored by the checker.

Out from Shinnecock Inn to Brooklyn was a solitary run with no competitors in front and no sight of them in the rear, where the indicator sometimes ran up to "55" and occasionally dropped down to "8," as the nature of the country demanded it. Even the Standard Oil king forgot that he was being tossed about like an abandoned bottle as he exclaimed: "We shall beat all the other fellows by an hour at least." But we did not, for we had not even wiped off the dust when Pardee pulled up his Oldsmobile outside the club premises. De Luxe was at his heels, Pope-Toledo was but ten minutes behind, and Cadillac chuc-chucced in ahead of a lot of the big fellows. Although all the machines had added to the strenuousness of the test by running at a speed far in excess of that demanded by the regulations, there was only one absentee, the Haynes machine, which skidded on a sharp turn at Mattituck, broke a wheel and ditched. The Thomas had a loose connecting rod and came in late in consequence. The Queen had to undergo carbureter adjustments and the Franklin broke its fan. Ten cars, however, finished with clean scores; in other words, ten out of twenty starters covered nearly 300 miles with no stops except at controls and with no other attention than filling the oil and gasoline tanks. It would be impossible to have more convincing proof of the reliability of the modern American automobile.

It remains for the committee to decide how the trophies—the Brooklyn *Life* Cup, Brooklyn *Eagle* Cup and Shinnecock Hills Cup—shall be awarded, the most probable solution of the difficulty being a final contest between the ten competitors. The machines are placed as follows:

CLASS A, MACHINES COSTING UP TO $1,500.

Maxwell, I. C. Kirkham, clean score, tied.
Cadillac, J. D. Rouk, clean score, tied.
Holsman lost nine minutes on carbureter adjustments.

CLASS B, MACHINES COSTING FROM $1,500 TO $3,000.

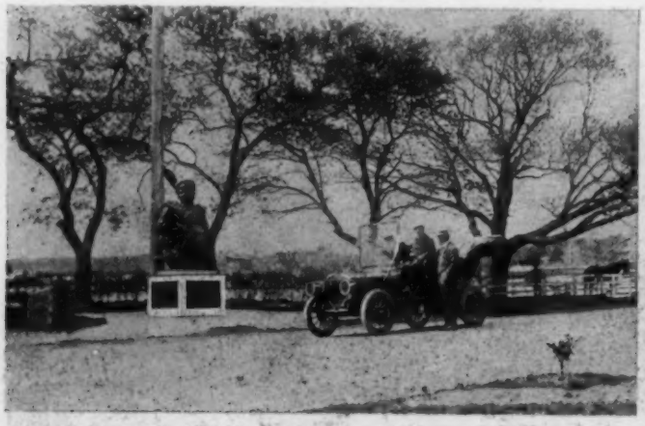
Columbia, E. H. Barnum, clean score, tied.
Oldsmobile, R. E. Pardee, clean score, tied.
Pope-Hartford, C. G. Arnold, clean score, tied.
Queen, carbureter adjustments; Thomas, loose connecting rod; Franklin, broken fan; Haynes, disabled; Aerocar, changed cooling water.

CLASS C, MACHINES COSTING $3,000 AND UPWARDS.

Matheson, R. G. Kelsey, clean score, tied.
Packard, S. H. Burns, clean score, tied.
Pope-Toledo, A. N. Wilcox, clean score, tied.
Pierce Arrow, A. B. Coles, clean score, tied.
Winton, C. A. Carlson, clean score, tied.
De Luxe and Dolson had carbureter adjustments; Welch broke pin in oiler.

TO HAVE AUTO INSTEAD OF HORSESHOW.

BUFFALO, N. Y., June 3.—President Robert W. Pomeroy, of the Country Club, one of Buffalo's fashionable social organizations, has announced that the club will not hold a horse show this year, as has been the custom. It has been decided to hold an automobile show instead. The date will be announced later.



CHAIRMAN EDWARDS, WHO WAS ALWAYS AT WORK.

LEAVING GREENPORT FOR HOMEWARD JOURNEY.

Giant's Despair Becomes Automobilists' Delight

BY George M. Schell

WALTER C. WHITE IN HIS WHITE STEAMER CLIMBING WILKES-BARRE MOUNTAIN (GIANT'S DESPAIR) IN 1:49 4-5.

WILKES-BARRE, PA., June 1.—While the mountain back of this city may be the despair of giants, it is just pie for the present-day American automobile. Indeed, after Decoration Day's happenings it might be well to change the name of the crack 6,000-foot hill to "Automobilists' Delight." Certainly every one of last year's records was knocked galley west, and new figures established which it would seem could not be materially bettered—at least for several years.

To illustrate: The course record of 2:11 1-5, held by H. N. Harding's 45-horsepower English Daimler, was lowered to 1:59 2-5 for gasoline cars by J. B. Ryall, driving the 60-horsepower Matheson 1906 Vanderbilt Cup car; to 1:49 4-5 for steam cars, by Walter C. White's 30-horsepower White steamer; and to 1:40 flat for motorcycles, by "Bill" Wray and his 6-horsepower Simplex-Peugeot.

In the event for cars costing over $5,000, "Willie" Haupt drove his "Great Chadwick 6" to a record of 2:07, as against the English Daimler's 2:11 1-5.

Last year's 2:27 record of the 50-horsepower Stevens-Duryea, driven by S. H. Hancock, was simply smothered by the Great Chadwick, which cut the figures to 2:02 2-5.

J. P. Hardy, in a 25-horsepower Pope-Hartford, knocked 1:12 2-5 off Herbert Bitner's 35-horsepower Rambler record of 3:18 1-5 for cars costing $4,000 and under when he negotiated the course in 2:05 4-5.

C. W. Hoffman piloted a 30-horsepower Stearns upwards in 2:16 4-5, capturing the event for stock touring cars of all prices and horsepower and completely equipped. In the event for Quaker City members Hoffman made the ascent in even better time, his figures being 2:13 2-5.

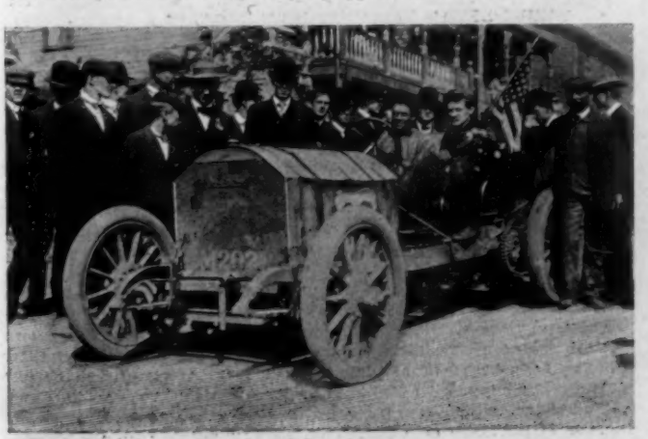
Charlie Soules' record of 2:56 4-5 for cars costing $2,500 and under, made in a 24-horsepower Pope-Toledo, was lowered to 2:31 3-5 by Guy Hutchinson in a 24-horsepower Corbin.

The record of 2:47 for stock cars costing $1,000 and under, held by H. J. Koehler in a 22-horsepower Buick, was cut to 2:47 by the 22-horsepower Maxwell, driven by H. A. Grant.

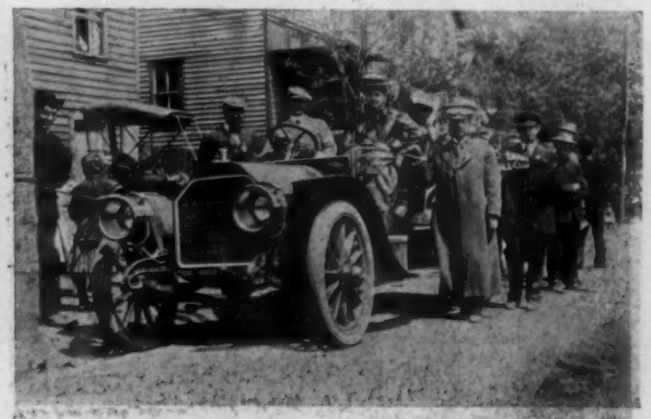
While the improvements made in the course accounts in some measure for the fast time in all the events, the vast improvement in cars and drivers since last year is responsible in great part for the betterment. The Wilkes-Barre Automobile Club spent nearly $500 in eliminating "thank-you-ma'ams" and widening and banking the road at the "Devil's Elbow" and on the ticklish "S" turn at the Mountain House, while the installation of the electric timing apparatus and the policing of the course cost as much more. But the club's enterprise was well repaid, for the Giant's Despair hill-climb, as a result of to-day's contests, has become the premier fixture of the kind in this country.

But One Discordant Note in Affair.

There was but one discordant note in the management of the affair, and that was the dispute which arose over the barring of steam cars from the free-for-all. It appears that Mr. White had made up his mind some time ago to send several cars to compete in the climb. The entry blanks sent out by the committee, aside from the usual price restrictions, contained no intimation that steamers would be placed in a separate class. Indeed, Mr. White



RYALL'S MATHESON RECORD HOLDER GETS A BOUQUET



C. W. HOFFMAN AND L. D. BERGER'S WINNING STEARNS.

THE LITTLE POPE-HARTFORD ON ITS EYE-OPENING RUN.

avers that the barring of his machines was not decided upon until he had arrived in the city, had had several trials upon the hill and had made it evident that they could cover the ground a trifle faster than the gasolines. Mr. White's contention is borne out in part by a letter, which reached him less than 24 hours before the starting of the first event and which, he declares, was the first official notification he had had of the barring of his entries:

WILKES-BARRE AUTOMOBILE CLUB,
Wilkes-Barre, Pa., May 29, 1907.

WALTER C. WHITE, ESQ.,
Wilkes-Barre, Pa.

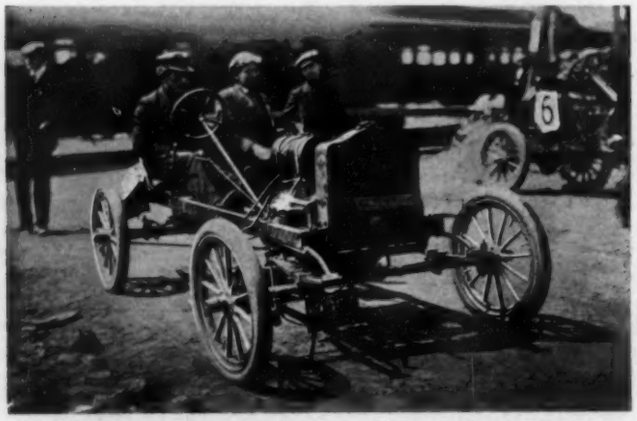
My dear Mr. White:—Concerning my conversation with you of yesterday in regard to your entries of White steamers, I am sorry that your entry, being received so late, made it impossible for us to notify you that steam cars had been barred from participation in all gasoline automobile events in the contest to be held May 30th.

This conclusion was reached only after it was found that a large number of gasoline entries could not be received were steam cars allowed to compete in the gasoline events, and, inasmuch as up to that time, May 22, and in fact until May 27, no steam car entries had been received, the Contest Committee could see no other way to accomplish the greatest success of the Meet than to admit the large number of gasoline entries by excluding the steam cars, which is a privilege reserved the committee by the wording of the entry blank, namely, "The right to accept or reject entries is reserved."

However, the club is not indifferent to the fact that you are here with your cars, and that other cars may be here, and to that end has 'phoned the Quaker City Motor Club to inquire if they will permit steam cars in their classes Nos. 2 and 8, and the writer is advised in the affirmative, understanding, however, that such entries must be made by members of the Quaker City Motor Club. Also, the Contest Committee has added an 11th event to the program for steam cars, offering gold, silver and bronze medals for the winners of first, second and third places, respectively. This event, with a few Quaker City events, offers 10 prizes which are available to be won by steam cars.

If you are agreeable to having your entries transferred to the classes in which the same will be allowed, kindly advise us to that effect immediately. We return herewith your original entries and cash deposits which accompanied the same, and also new blanks for you to fill out if the classes may meet with your approval.

Yours truly,
(Signed) P. A. MEIXEL, President.
C.



STRIPPED MAXWELL THAT CLIMBED THE HILL IN 2:47.

Mr. White is nothing if not a fighter, and, seeking out the newspaper men at the Franklin Club and the Sterling Hotel, he handed out the following statement:

"Some days ago entry blanks were sent me by the committee and I decided to enter in the free-for-all and in the Quaker City runabout class. I shipped my cars from Cleveland, arriving with them on Monday. I met a member of the committee, and, after a general discussion regarding the contest, filled out the entry blanks and turned them over to him. I then went to the hill and tried out my cars with very satisfactory results. When I returned to my hotel, late in the evening, I learned that Mr. Matheson had tried to get me on the telephone. Tuesday morning, when I went out for practice, several people told me that I was to be barred. These reports, at first incredible, were so persistent that I finally sought out the president of the club, and through him met Mr. Matheson. Mr. Matheson told me that, at a meeting of the committee held last Wednesday night, steam cars had been barred from competing with the gasoline cars. He said that the committee could not get entries of gasoline cars unless this step was taken. I asked why no announcement of this ruling was ever made or why I had not been previously notified. I am still awaiting the answer.

SIXTY-HORSEPOWER THOMAS MAKING THINGS HUM.

TAKING DEVIL'S ELBOW AT HIGH SPEED IN A DRAGON.

"I am informed that the Quaker City Motor Club was communicated with, and, with characteristic sportsmanship, said they could see no reason why I should not compete in their event. So I suppose I am all right as regards this event, although, as a matter of fact, the committee has returned to me all of my entry fees. The official program, issued to-day, omits my entry from the free-for-all and inserts it in a class for steam cars which was not even mentioned in the original entry blanks and which I had in no way intimated that I would enter. I have supposed, as has everyone else, that every car which came within the proper price limitations or fulfilled other conditions which were expressly stated, could enter the several classes. Last year, when one of our cars (of much less power) competed, no question was raised regarding its eligibility.

"Who ever heard of barring any car from a free-for-all event? This meet is supposed to be held under American Automobile Association rules, which recognize no distinction as to motive power. In face of all these considerations, to say nothing of the fundamental principle of sport, 'May the best win,' the committee can urge in justification of their action only the stereotyped clause that they may 'reject all entries.'

"Furthermore, an over-night change has been made in the conditions governing the award of the Board of Trade cup. While it was formerly to go to the car making the best time, it now appears that my cars are barred form competing for this cup. Where do I stand?"

The committee refused to reverse its action, and yesterday the free-for-all was run off without the steamers, and as Mr. White refused to allow his cars to start in the special steam class in which, he said, they had been entered by the committee without his authority, the latter allowed him a time trial for each of his two cars—the "18" and the "30." The first resulted in a fizzle. its gasoline overflowing and catching fire near the top of the mountain, necessitating a stop and a hurried pushing of the car up to the finish to get it out of the way of the next contestant.

But Mr. White came back strong later in the day, when the second trial resulted in the establishment of a course record of 1:49 4-5 for automobiles, beating the best gasoline time, the Matheson's 1:59 2-5, by nearly ten seconds. Mr. White has announced his intention of protesting to the A. A. A. Racing Board against his exclusion from the free-for-all, and will ask that the first prize in that event be awarded to him in view of the fact that his car made the best time of the day.

L [COMING OF THE RAMBLER ON A STRAIGHT STRETCH.

SPEED OF THE STODDARD-DAYTON ON THE STIFF GRADE.

The Contest Committee of the Quaker City Motor Club fully explained its refusal to allow Mr. White to start his cars in its events by referring to a decision made before leaving Philadelphia that only those cars which were driven up from the Quaker City in the club run of that organization would be eligible. This explanation was satisfactory, especially in view of the fact that a Stanley runabout owned and entered by D. Walter Harper, a member, won the Quaker City runabout event in the very fast time of 1:56 4-5.

Surprises Sprung on the Wiseacres.

There were several surprises sprung on the wiseacres, one of them—two of them, in fact—being the winning of both the stock-car-under-$5,500 and the stock-car-over-$5,000 events by H. B. Larzelere's 50-horsepower Great Chadwick "6," driven by "Billy" Haupt. In the first-named event the Chadwick climbed to the finish in 2:02 2-5, the gasoline record up to that time and only 2 3-5 seconds slower than the final best figures of the Matheson Vanderbilt car. In the over-$5,000 event the Chadwick beat out two Mathesons and a Fiat with a run in 2:07.

THE CORBIN WINNING THE EVENT IN ITS CLASS.

In the race of the day, the free-for-all, the Chadwick was beaten out by the "60" Matheson, driven by J. B. Ryall, and the "60" Thomas Flyer, driven by M. Roberts, which latter car it had previously beaten in the $5,500-and-under class. Four of the eight starters in the free-for-all beat the course record of 2:11 1-5—the Matheson, 1:59 2-5; the Thomas Flyer, 2:01 1-5; the Chadwick, 2:05 3-5, and the 25 Pope-Hartford, 2:06 4-5. The performance of the latter car was another surprise. Its comparatively low power put it in the long-shot class but it performed consistently in all the events in which it started. Its win of the $4,000-and-under class in 2:05 4-5, beating out such veterans as the Thomas 60, the Rambler 35-40, the Oldsmobile 35-40, and the Pennsylvania 35, gave the first intimation of its stability as a hill climber and its triumphs were hailed as a great victory by the "valves-in-the-head" advocates.

One wonderful performance which should be noted was that of "Bill" Wray and his 6-horsepower Simplex-Peugeot motorcycle. THE AUTOMOBILE representative was at the "Devil's Elbow" when Wray made his 1:40 trial, and saw a specimen of dare-devil work which has probably never been excelled in this country. Climbing up the hill at full speed, he took the turn, which is many degrees less than a right angle, without an appreciable let-up, and sped on up and out of sight as a great sigh of relief rose from the more than 10,000 people who had selected that point of the course as the best place to witness possible accidents. The committee had prepared for any emergency of the kind, and had installed an ambulance and temporary hospital at the Mountain House, but, fortunately, they were not called upon.

Apart from the White steamer incident the affair was run off with a promptness and lack of friction which argues well for the

CHADWICK "GREAT SIX" THAT GATHERED IN HONORS.

thoroughness of the preparations. It was no child's play to pull off more than 60 trials in six hours, and keep the course clear and prevent mix-ups. Allowing five minutes to each trial, and keeping all the contestants in each event at the top of the mountain until that event was finished, there were absolutely no delays, and the 30,000 spectators who lined the course had something to keep them busy all the time. Winners and second and third place cars were given blue, red, and white flags as they came down the mountain. Announcements of results and of the next car to essay to climb were made not alone at the start and finish, but at the Elbow, the Mountain House, and at Prospect Rock, so that all along the 6,000-foot route up the mountain the crowds knew just what was going on all the time. Press men and officials were given free access to the course, but at all the points where the crowds congregated the thickest policemen, armed with red flags, kept the people behind the ropes. The officials at the start were congregated on the porch of a little house in the village of Laurel Run, at the foot of the mountain. At the other official stations small wooden stands had been built, all connected by telephone. At the conclusion of the races the management slipped up, not having made any provision for carrying the officials back to their hotels. The latter were equal to the occasion, however, and, pre-empting a water-wagon, were driven triumphantly back to town the observed of all observers.

The winner of the runabout class in the recent Harrisburg endurance run the 30-35 Stoddard-Dayton of E. L. Leinbach, competed in two events and landed one third. The Autocar which won last week's 24-hour Quaker City Derby also took part in a couple of races, but failed to score. The Dragon and the Mitchell which finished fourth and fifth in the twice-round-the-clock event were also there, but failed to bring back a trophy. None of these four cars, however, had been specially tuned up for the climb, all having their usual stock gears and going into the several events in the trim in which they were driven up from Philadelphia.

The success of the Giant's Despair climb was such that the officials of the Wilkes-Barre Automobile Club are positive that the event will become an annual fixture. Although the club is put to considerable expense in preparing the course and returning it to its original shape and although the receipts do not begin to approximate the expenditure, the officials are prepared to run the event annually as an advertisement for their town and their club. As an earnest of their good faith in this matter, they point to many miles of improved roads in and around Wilkes-Barre, not to mention the signboarding of the roads leading into the city. The money of the club and of its individual members has in great part paid for these improvements.

The Summary of the Events.

TIME TRIAL FOR COURSE RECORD (2:11 1-5, HELD BY ENGLISH DAIMLER).

White, 30-h.p.; driver, Walter C. White.....1:49 4-5

FREE-FOR-ALL, STRIPPED AND RACING CARS.

1. Matheson, 60-h.p.; driver, J. B. Ryall.....1:59 2-5
2. Thomas Flyer, 60-h.p.; driver, M. Roberts.....2:01 1-5
3. Great Chadwick 6, 50-h.p.; driver, Wm. Haupt.....2:05 3-5
4. Pope-Hartford, 25-h.p.; driver, J. P. Grady.....2:06 4-5
5. Matheson, 60-h.p.; driver, Chas. Ward.....2:18 4-5
6. Matheson, 60-h.p.; driver, Ross Anderson.....2:28 1-5
7. Maxwell, 22-h.p.; driver, F. Offenhauser.....2:53 4-5
8. Maxwell, 14-h.p.; driver, Chas Fleming.....3:03 2-5

STOCK TOURING CARS, ALL PRICES AND HORSEPOWER, COMPLETELY EQUIPPED AS CATALOGUED.

1. Stearns, 30-h.p.; driver, C. W. Hoffman.....2:16 4-5
2. Stearns, 30-h.p.; driver, Guy Vaughn.....2:19 2-5
3. Pope-Hartford, 25-h.p.; driver, J. P. Grady.....2:39 4-5

STOCK CARS COSTING OVER $5,000.

1. Great Chadwick 6, 50-h.p.; driver, Wm. Haupt.....2:07
2. Matheson, 60-h.p.; driver, Chas Ward.....2:19
3. Matheson, 45-50-h.p.; driver, Ross Anderson.....2:24 4-5
4. Fiat, 35-h.p.; driver, Geo. Kessler.....2:35 4-5

STOCK CARS COSTING $5,500 AND UNDER.

1. Great Chadwick 6, 50-h.p.; driver, Wm. Haupt.....2:02 2-5
2. Thomas Flyer, 60-h.p.; driver, M. Roberts.....2:06 2-5
3. Stearns, 45-h.p.; driver, Guy Vaughn.....stalled

STOCK CARS COSTING $4,000 AND UNDER.

1. Pope-Hartford, 25-h.p.; driver, J. P. Hardy.....2:05 4-5
2. Thomas Flyer, 60-h.p.; driver, M. Roberts.....2:06 3-5
3. Knox, 30-h.p.; driver, Wm. Bourque.....2:37 2-5

STOCK CARS COSTING $2,500 AND UNDER.

1. Corbin, 24-h.p.; driver, Guy Hutchinson.....2:31 3-5
2. Maxwell, 14-h.p.; driver, C. A. Fleming.....2:38
3. Knox, 30-h.p.; driver, Wm. Bourque.....2:41 1-5

STOCK CARS COSTING $1,000 AND UNDER.

1. Maxwell, 22-h.p.; driver, H. A. Grant.....2:47
2. Maxwell, 14-h.p.; driver, Chas. Fleming.....3:07
3. Buick (1906 G), 22-h.p.; driver, H. J. Koehler.....3:18 3-5

QUAKER CITY TOURING CAR CLASS (FOR MEMBERS OF QUAKER CITY MOTOR CLUB ONLY).

1. Stearns, 30-h.p.; driver, C. W. Hoffman.....2:13 2-5
2. Stanley touring car, 20-h.p.; driver, D. W. Harper.....2:31
3. Autocar, 30-h.p.; driver, J. F. Brown.....3:10

QUAKER CITY RUNABOUT CLASS (FOR MEMBERS OF QUAKER CITY MOTOR CLUB ONLY).

1. Stanley runabout, 20-h.p.; driver, D. Walter Harper.....1:56 4-5
2. Oldsmobile, 35-40-h.p.; driver, T. W. Berger.....2:47 4-5
3. Stoddard-Dayton, 30-35-h.p.; driver, E. L. Leinbach.....2:52 3-5

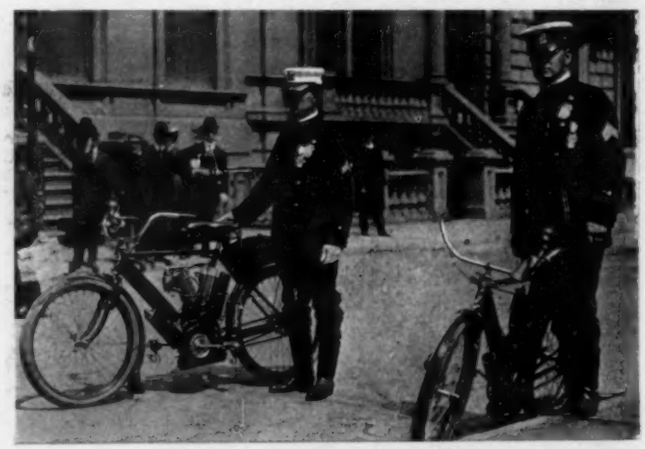
MOTORCYCLES, FREE-FOR-ALL.

1. Simplex-Peugeot, 6-h.p.; driver, Bill Wray.....1:40
2. Indian (twin-cyl.), 5-h.p.; driver, Oscar Hedstrom.....2:01
3. Indian, 4-h.p.; driver, Jos. McLaughlin.....2:18

AUTO TERRORS HAVE RACES OF THEIR OWN.

Any automobilist who wished to have the pleasurable sensation of seeing a "motor-bike cop" coming toward him at full tilt without visions of a subsequent visit to the police court and its attendant fine could have enjoyed himself to the limit last Saturday at the Empire City race track. There were several score of them there and they discovered that the coppers are good for thirty-five miles an hour without trouble, while Commissioner Bingham also learned things regarding the abilities of this part of the force under his command.

The most interesting event of the day was a fifteen-mile race in which six competitors took part. Patrolmen John Dillon, of the Bronx, and Arthur Innes, of Brooklyn, were alternate favorites for six miles, the latter finally crossing the tape fifty feet ahead of his hanger-on patrolman, S. W. Johnston, of Brooklyn, being a close third. In the first mile of this race the forks of Sergeant McDonald's machine broke, but he escaped injury. The redoubtable Sergeant Casey, whose prowess in this field gave



TWO OF NEW YORK CITY'S NOTABLE "BIKE" COPS.

Sergeant Eugene Casey and Acting Sergeant Benjamin Mallam, recipients of the Automobile Club of America honor medals.

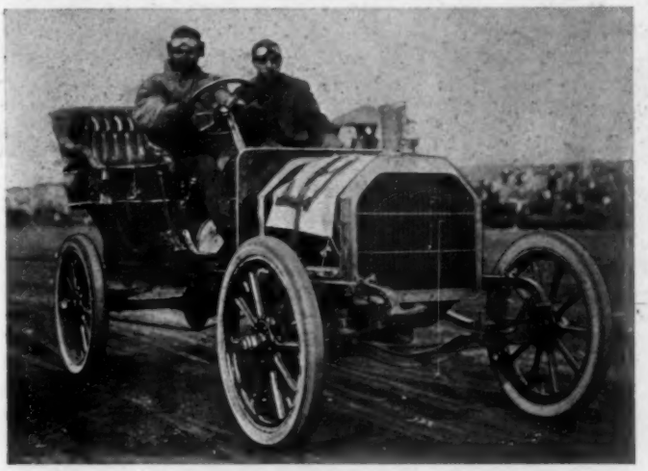
rise to the name "the terror of autoists," was not in good fettle. He entered two races, but was not even placed. Sergeant Anthony Howe was the star of the meet, winning the mile championship in 1:39, the ten-mile handicap from scratch, the five-mile open, the obstacle race, and he was also a member of the winning team in the pursuit race contested for by a New York and a Brooklyn team, Sergeant Mallam being his partner. With the exception of the latter's machine, which was a twin-cylinder Indian, all machines were single-cylinder models of same make.

Special policeman Winthrop E. Scarritt and expert timer S. M. Butler of the A. C. A. were the officers of the meet.

OLDSMOBILE WINS TWICE AT BAY STATE MEET

By C. F. MARDEN.

BOSTON, May 30.—This was Oldsmobile day at the Readville race track, where the Bay State Automobile Association held its annual meet. There were only two events, one at 100 miles for stock touring cars and the other at 50 miles for stock runabouts, and the Oldsmobiles entered by the A. E. Morrison



FALBERTH AND OLDSMOBILE THAT WON THE 100-MILE.

Company won both, establishing a new world's record of 2 hours 10 minutes 30 seconds in the touring car race, and covering the fifty miles in 1 hour 3 minutes 24 seconds, which is also thought to be a record. William Falberth drove the touring car, which went the distance without a falter, reeling off mile after mile as regularly as clock-work. Fred Allen, of Boston, drove the runabout, and its performance was no less consistent than that of the touring car. The two Oldsmobiles were of 35 horsepower, equipped with Diamond flat-tread quick-detachable tires, and it was unnecessary to change a single tire from start to finish.

In the touring car race a 30-horsepower Cadillac, driven by Harry Murch, was second, and a 50-horsepower Frayer-Miller, driven by Fred A. Lewis, the local manager, was third. In the runabout race a 40-horsepower American, driven by W. A. Frederick, won second place, while a Royal Tourist, with Harold D. Church at the wheel, was in third place. There were eight starters in the 100-miles event and eleven in the runabout class, all being gasoline cars with one exception, a steam runabout of 25-horsepower, driven by Bert Holland.

The day was ideal for racing and the track was in the very best of condition. The track had been rolled smooth, and was so thoroughly oiled that the cars, spinning around mile after mile, failed to raise any dust. This gave the spectators a fine view of the races, and despite their length the crowd of over 5,000 people kept up interest throughout the afternoon. Not a single accident marred the day's sport.

At the beginning of this event the 40-45-horsepower Jackson had jumped into the lead, closely pursued by the Oldsmobile and the American. Robert Burnham was at the wheel, and by skillful driving and a remarkable show of speed he succeeded in lapping his nearest competitor in the first twenty-five miles. Holland had been unable to get his Stanley going well at the beginning, but when he was about twenty miles and the Jackson at twenty-five or six, the steamer got into shape, and Holland started out to make up for lost time. He took the Jackson for a pacemaker, and after chasing it for several miles eventually got ahead. Then it was nip and tuck, mile after mile, not more than fifty feet separating the two cars at any time.

A. E. Morrison, besides his Oldsmobile entries, had a Stearns 30-horsepower stripped touring car in the 100-miles race, which he drove himself. At the very start he gained the lead, and by cutting out a terrific pace succeeded in gaining regularly every lap until, at thirty miles, he had a lap or two on the Oldsmobile and the Cadillac. His driving was one of the best exhibitions of the day, and he was looked upon as an almost certain winner. In attempting to pass two cars on the lower turn, however, one of his tires flew off. He completed the lap, however, replaced the tire and was again in the race, having third place at thirty-five miles. His luck was against him, however, for he had more trouble, and though he kept at it he had to make frequent stops and eventually finished sixth. Harry Murch drove a heady race with his Cadillac, rarely varying the speed from round to round. The Dragon, driven by John Liffike, of the Dragon Automobile Company, and the Grout, driven by K. A. Grout, kept on very even terms mile for mile but the Grout won fourth place and the Dragon fifth. The 20-24-horsepower Jackson was seventh and the Moon was eighth. The position of the Moon was due to bad luck, as Neilsen drove a fine race. Summaries:

One Hundred-Mile Race for Stock Touring Cars.

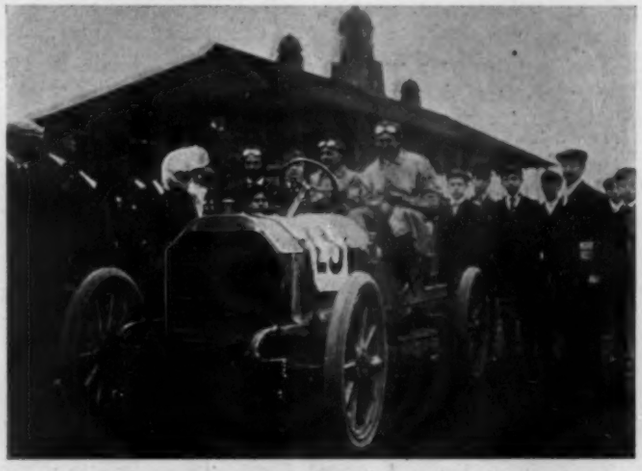
Place	Car	Driver	H.P.	Time
1	Oldsmobile	W. Falberth	35	2:10:30
2	Cadillac	H. Murch	30	2:16:55 1-5
3	Frayer-Miller	F. A. Lewis	50	2:38:30 1-5
4	Grout	K. A. Grout	35	
5	Dragon	J. Liffike	24	
6	Stearns	A. E. Morrison	30	
7	Jackson	E. P. Blake	20-24	
8	Moon	V. A. Neilsen	30-35	

The times of the winning car at intermediate distances were: 25 miles, 32:10 2-5; 50 miles, 1:05:09 2-5; 75 miles, 1:37:48 4-5; 85 miles, 1:50:55 1-5.

Fifty-Mile Race for Stock Runabouts.

Place	Car	Driver	H.P.	Time
1	Oldsmobile	Fred Allen	35	1:03:24
2	American	W. A. Frederick	40	1:04:45 1-5
3	Royal Tourist	H. D. Church	40	1:08:52 1-5
4	Stanley	Bert Holland	25	
5	Jackson	Robert Burnham	40-45	
6	Corbin	J. W. Swan	24	
7	Grout	C. B. Grout	35	
8	Crawford	G. M. Wetherbee	45	
9	Knox	A. E. Dennison	30	
10	Dragon	E. O'Donnell	24	
11	Logan	E. P. Blake		

The times of the winning car at intermediate distances were: 5 miles, 6:48; 10 miles, 13:08 2-5; 15 miles, 19:35 3-5; 20 miles, 25:49 1-5; 25 miles, 32:04; 30 miles, 38:07 2-5; 35 miles, 44:28; 40 miles, 50:58 2-5; 45 miles, 57:09 4-5.



FRED ALLEN AND HIS WINNING OLDSMOBILE RUNABOUT

GRAND LINE-UP OF THE OLD AND NEW, FAST AND SLOW, OF THE OLDSMOBILE CLAN AT EMPIRE CITY CRACK.

OLDSMOBILERS GET TOGETHER AND CELEBRATE

IF one had found himself put down unexpectedly at the vicinity of Fifty-second street and Broadway on Memorial Day morning he would certainly have gained a strong impression that all the automobiles in New York were Oldsmobiles. There were Oldsmobiles here, there and everywhere—the entire neighborhood was preempted by Oldsmobiles of all vintages and they kept coming steadily, until when the time for the parade to the Empire City track came to start there were some 300 of them to fall in line. It was Oldsmobile day, the only event on the program not participated in by the Oldsmobilers themselves being an exhibition 15-mile drive by Cedrino in the Fiat, Jr., in which he succeeded in lowering his previous record by a substantial margin. The Italian did every one of the fifteen miles under the 60 second mark and established new world's records for 10 and 15 miles by a medium weight car on a circular track. The 10-mile mark was passed in 9:47 1-5 and the total distance was covered in 14:45. The previous records for both distances were held by Bernin in a Renault.

Among the regular events on the program, an Australian pursuit race easily carried off all the honors in point of interest. It was also dubbed the Hare and Hounds race and consisted of starting four cars at the quarter mile posts, the winner to be he who first passed the other three contestants—the old unlimited pursuit race of bicycling days. D. Bruce Brown started from the tape, C. L. Waterbury at the first quarter pole, J. Augustine at the half mile, and Dr. J. P. Thomas at the three-quarter. Augustine was eliminated by Waterbury at the end of 2 1-4 miles, the next to drop by the wayside being Dr. Thomas, who was passed by both the remaining contestants simultaneously after he had completed 5 1-2 miles. Waterbury held out gamely for three-quarters of a mile further and Brown's efforts to get by him aroused a great deal of interest, finally succeeding right in front of the stand and just before completing the seventh mile. Time, 7:36 4-5.

Honors in the one-mile race for curved dash runabouts were carried off by John W. Colby, of Norwalk, Conn., in 2:42 2-5; J. J. Durand and Fred Holbrook, both of New York City, coming along in the order named. The two-mile event for 1906 roadsters was won in 2:47 1-5 by C. Allan Hudson, of Westbury, Long Island, with L. R. Adams, of the Long Island Automobile Club, second. After making a false start and being compelled to come back to the line, Oliver Light, of Dobbs Ferry, overcame this ill omen and captured the mile race for 1906 touring cars in 1:35 4-5; J. H. Walsh, Elmhurst, Long Island, was second, and J. J. Durand third. L. E. Bamberger, of New York, took the two-mile race for 1907 touring cars in 3:20 1-5; Tunis Speare and Allan Hudson, both New Yorkers also, coming in second and third. The last event on the large car program was a three-mile event for 1907 roadsters. It was won by D. Bruce Brown in 3:48 2-5, with C. L. Waterbury second, and F. G. Schmidt third.

Something that promised to be of considerable interest was the "progress race" between a 1903 curved dash runabout of the single-cylinder type and a 1907 roadster, the former being driven by a diminutive youth of the name of Edward Steurwald, while the roadster was piloted by Tunis Speare. According to the program, the new car had to make two laps to the ancient one's single time round, but evidently no one had made very painstaking calculations as to their relative ability, for the arrangement fell short by half, the new car completing two miles in 2:51, while the veteran required 5:15 to do the same distance, or about four laps to one.

The crowning event of the day was the drawing for a 1907 Oldsmobile; there were some 300 numbers to be drawn, each owner being entitled to an opportunity to test his luck. The good fortune fell to Lindsley Tappin, a young New York stock broker, who chose an Oldsmobile roadster as his prize. The other prizes consisted of silver cups, and as arrayed along the fence by the host of the day, Gen. John T. Cutting, made an impressive showing. They were awarded as fast as the events were run off.

The summaries follow:

ONE MILE, SINGLE CYLINDER RUNABOUTS.

1. John W. Colby, Norwalk, Conn.....2:42 4-5
2. J. J. Durand.
3. Fred Holbrook.

TWO MILES, 1906 ROADSTERS.

1. C. Allen Hudson.....2:47 1-5
2. J. R. Adams.

ONE MILE, 1906 TOURING CARS.

1. Owner, H. T. Clinton; driver, Oliver Leighton.....1:35 4-5
2. John H. Walsh.
3. J. J. Durand.

TWO MILES, 1907 TOURING CARS.

1. Owner, L. E. Bamberger; driver, G. S. Richardson.....3:20 1-5
2. C. Allen Hudson.
3. Tunis Speare.

THREE MILES, 1907 ROADSTERS.

1. D. Bruce Brown.....3:48 2-5
2. C. Allen Waterbury.
3. F. G. Schmidt.

FIFTEEN-MILE EXHIBITION AGAINST MIDDLEWEIGHT CAR RECORDS BY CEDRINO, DRIVING 24-HORSEPOWER FIAT JUNIOR.

One mile, 0:59 3-5; 2 miles, 1:57 4-5; 3 miles, 2:57 2-5; 4 miles, 3:56 1-5; 5 miles, 4:54 4-5; 6 miles, 5:53 1-5; 7 miles, 6:52; 8 miles, 7:50 3-5; 9 miles, 8:48 2-5; 10 miles, 9:47 1-5; 11 miles, 10:46; 12 miles, 11:45 2-5; 13 miles, 12:44 1-5; 14 miles, 13:44 2-5; 15 miles, 14:45.
New records established from 10 to 15 miles inclusive.

HARE AND HOUND RACE, FOUR STARTERS AT ONE-QUARTER-MILE DISTANCES, WINNER TO BE FIRST TO PASS THREE CARS.

1. D. Bruce Brown in 6 miles.....7:36 4-5
2. C. L. Waterbury.
3. Dr. Julian P. Thomas.

HOW THEY CLIMBED THE HILL AT BRIDGEPORT

BRIDGEPORT, Conn., June 3.—With Joe Tracy as a drawing card, the success of the Bridgeport Automobile Club's hill climb at Sport Hill, Easton, last Thursday, was assured. The weather gods were propitious and interest in the event did the rest, so there was nothing left to be desired; the spectators lined the entire course many deep at all points. The contest was in charge of A. L. Riker as referee, who managed the affair superbly, while the arrangements worked out by Chairman Ralph M. Sperry and his committee made things go like clockwork.

The Stanley steamer carried off the honors by making the distance in 1:24 2-5, with a big Stearns as next best in 1:25 flat. Tracy had originally been down to drive the Locomobile as a contestant, but Mr. Riker, not considering that the entry and his position as referee were consistent, decided to withdraw the car, so that the latter was merely sent over the course against time, the result being a tie with the Stanley. Most of the spectators and club officials were confident that Tracy could pilot the Locomobile over the course in better time and urged Mr. Riker to consent to a second trial, which was not granted.

The hill is characterized by a nasty S turn at the top and on this some came to grief. A Pope-Hartford car with H. P. Seymour, assistant superintendent of the Pope factory, at the wheel suffered the most severely, but strange to say, this accident occurred on the only straight stretch of the course and in plain view of the judge's stand. Seymour was going at a terrific clip and had the best time of the day beaten by at least fifteen seconds, when he lost control as the result of the car's jumping into the air in crossing a gully. It leaped the ditch, barked a big maple, skinned a second and made its finale at the inevitable telegraph pole. Seymour was thrown some distance, but was only slightly dazed. The only other accident of the day happened to W. Irvine Fickling's Stearns, which bore the magic number 23. It got away from the start in a manner that befitted its entry numeral, but came to grief a short distance up the road, with two bursted tires on the front wheels. The axle and front wheels of the car were removed and those of Mr. Fickling's touring Stearns substituted, the car subsequently making the distance against time and doing it in 1:25 or but 3-5 of a second off the day's record.

The day's program consisted of five events for the different classes of cars and one for motorcycles. A silver cup was put up for each event, that in class one being captured by a 12-horsepower Maxwell, driven by Mr. Watson, of Pawtucket, R. I. He was the first starter of the day and covered the course in 2:06. Ralph Sperry, driving a 15-horsepower Ford, was the only other entrant and did it in 2:18. This was for cars under $1,000.

In the second class Harry D. Gates, of the Fairfield Auto Company, captured the prize in a 12-horsepower Reo.

The third class for cars from $2,000 to $3,000 brought the record down to 1:40, which was made by Herbert Seymour in a 30-horsepower Pope-Hartford.

Class four was without limit above the minimum of $3,000 and provided more interest than its predecessors. The honors were taken by Nat Bishop's 50-horsepower Simplex, with John Woods at the wheel, crossing the line in 1:37 3-5, while T. W. Pearsall's Packard 30 did it in 1:41 3-5.

The free for all was the real event of the day, a Thomas leading off with a performance of 1:30 1-5; the Stearns came next, but butted the bank, then the little Stanley cleared the field by roming over the line in 1:24 2-5. The summaries:

CLASS ONE.—STOCK CARS COSTING $1,000 OR LESS.

1. Maxwell, 12-h.p.; driver, Mr. Watson.....2:06
2. Ford, 15-h.p.; driver, Ralph Sperry.....2:18

CLASS TWO.—STOCK CARS COSTING $1,000 TO $2,000.

1. Reo, 16-h.p.; driver, Harry D. Gates.....2:19
2. Reo, 16-h.p.; driver.....2:27
3. Jackson, 20-h.p.; driver, Arthur W. Bell.....2:30

CLASS THREE.—STOCK CARS COSTING $2,000 TO $3,000.

1. Pope-Hartford, 30-h.p.; driver, Herbert Seymour.....1:49
2. Oldsmobile, 40-h.p.; driver, Mr. Lyford.....2:12
3. Continental, 30-h.p.; driver, Mr. Johnson.....2:12

CLASS FOUR.—STOCK CARS COSTING OVER $3,000.

1. Simplex, 50-h.p.; driver, John Woods.....1:37 3-5
2. Packard, 30-h.p.; driver.....1:41 3-5
3. Packard, 30-h.p.; driver, John Woods.....1:46

CLASS FIVE.—FREE-FOR-ALL AND RUNABOUTS TO $5,000.

1. Stanley, 20-h.p.; driver, C. S. Bragg.....1:24 2-5
2. Locomobile, 40-h.p.; driver, Joe Tracy.....1:24 2-5
3. Thomas, 60-h.p.; driver, George Townsend.....1:30 1-5
4. Stevens-Duryea, 50-h.p.; driver, R. B. Crawford (protested).....1:32 3-5
5. Stearns, 60-h.p.; driver, W. I. Fickling (protested).....1:25
6. Oldsmobile, 40-h.p.; driver, J. W. Burrall.....1:36 2-5
7. Thomas, 40-h.p.; driver, Kenneth McNeil.....1:46 1-2
8. Continental, 30-h.p.; driver, Mr. Johnson.....1:52 3-5
9. Thomas, 60-h.p.; driver, G. Townsend.....2:02
10. Oldsmobile, 40-h.p.; driver, F. W. Williams.....2:28 1-5
11. Berliet, 40-h.p.; driver, W. J. Morden.....1:51 1-2

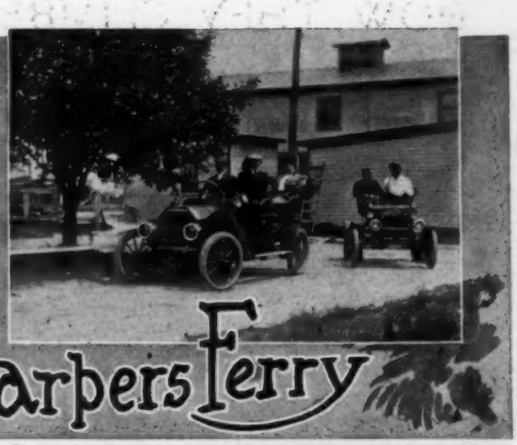
CLASS SIX.—MOTORCYCLES.

1. Indian, 2 1-4-h.p.; ridden by Peter H. Cox.....1:30
2. Curtiss, 5-h.p.; ridden by C. Edward Clark.....1:31 1-5

JOE TRACY CLIMBING SPORT HILL AT BRIDGEPORT, CONN., MEMORIAL DAY, IN HIS 40-HORSEPOWER LOCOMOBILE.

Washington Autoists Run to Harpers Ferry

SECOND SECTION LEAVING THE CLUB HOUSE.



PRESIDENT CAVERLY AND SECRETARY MARK BLAZED THE WAY.

WASHINGTON, D. C., June 3.—Harpers Ferry, W. Va., was the objective point of the initial run of the year of the Automobile Club of Washington, held May 29-30. Numerically, and in every other way, it was the best run the club has ever had, and has caused many members who have been heretofore lukewarm on the touring proposition to become enthusiastic over the delights of touring. The future runs of the club, and a number of very interesting ones, have been planned, will doubtless bring out the full strength of the club.

The start was made on the afternoon of May 29 from the club's country home on the Brightwood road. President Caverly, in an Oldsmobile touring car, and Secretary Mark, in a Maxwell, blazed the way, and were followed in quick succession by the balance of the party. The route was out the Brightwood pike to Olney, where a sharp turn to the left was made. Ridgeville, about thirty-four miles out, was the first stop.

The roads were in excellent condition, barring the numerous waterbrakes that are encountered throughout the entire journey. The grand old woods of Maryland, the sloping hills, the pretty streams, the fertile lands, the prosperous farms and homesteads, the ancient landmarks that date back to the days of the Revolution, make this one of the most interesting routes leading out of Washington. At Ridgeville the tourists struck the National Pike, and from this point they followed the route to Harpers Ferry so ably described, pictorially and otherwise, by "Pathfinder," in the May 9 issue of THE AUTOMOBILE.

Harpers Ferry was reached at 6 o'clock, the seventy-three miles being covered in five hours, including stops made at Ridgeville and Frederick. The Hill Top House, one of the highest points above Harpers Ferry, cared for the party, Proprietor Loving leaving nothing undone that would add to the pleasures of the tourists. The homeward trip was begun on the afternoon of Decoration Day, the clubhouse being reached at dusk.

THOMAS "SIXTY" WINS BENNINGS "HUNDRED."

WASHINGTON, D. C., May 31.—Two automobile races and a motorcycle race comprised the program offered by the United States Motor Racing Association at the Bennings race track, Decoration Day. The principal event was the District Endurance Derby at 100 miles, open to touring cars and touring runabouts of 60-horsepower and under. It was won by W. C. Hood in a 60-horsepower Thomas in the fast time of 2:12:43. A. L. McCormick, driving a 35-40-horsepower Oldsmobile, was second, and J. A. Lutz, also in a 35-40-horsepower Oldsmobile, was third, their respective times being 2:22:1 and 2:26:8.

There were seven starters, the others being R. Mongini, 30-horsepower Columbia; Mrs. Cuneo, 45-horsepower Rainier; Howard Gill, Thomas "Forty," and Jack Conway, 50-horsepower Thomas. Hood took the lead from the start and was never headed, although Conway pushed him hard for fifty miles. The latter then began to have trouble, finally withdrawing at the end of the seventy-sixth mile. Mrs. Cuneo, making her first appearance in Washington, created quite a sensation by her daring driving. She was in bad at the start, one of the four cylinders of her car being put out of commission before the end of the first mile. Tire troubles also caused her to make two stops, but she pluckily went the entire route. Mongini also finished, and made a hit with the crowd by his clever driving.

Hood also walked away with the other automobile event, which was at ten miles for the District championship. He drove the same car as in the 100-mile event and finished in 6:28, Jack Conway getting the place, with Howard Gill third. Mangol won the three-mile motorcycle race on an Indian; time, 4:11.

About four thousand people were present, but it is reported the promoters are not satisfied with the showing made in Washington, and will drop this city from the circuit. The weather was ideal, but there were many counter attractions that served to keep down the attendance.

MOTORCYCLISTS STORM MANHASSET HILL.

This year, in holding its fifth annual hill climb, the New York Motorcycle Club co-operated with the Brooklyn Motorcycle Club and the joint affair was held on Manhasset Hill, a twisting rise of stiff grades on the road between Manhasset and Great Neck, a short distance out on Long Island. Stanley T. Kellogg, of Springfield, Mass., whose name has always figured well up on the lists of the winners at every motorcycle meet, made a good attempt at maintaining his record in this respect by carrying off the first in the leading event for machines in Class 1, reaching the top of the hill on his 2¼-horsepower single-cylinder Indian in the good time of 1:14 4-5, while he took second in all the remaining events. The sharp turns of the hill proved too much for some of the riders, two of whom went down.

The winner in Class 2 was Albert Book, on a 4-horsepower twin-cylinder Curtiss, in 1:04 1-5, while G. H. Curtiss came in first in both Classes 3 and 4 on a 7-horsepower Curtiss in 0:55 and 0:56 1-5, respectively. The summaries follow:

CLASS I.

1.	Stanley T. Kellogg, 2 1-4-h.p. Indian	1:14 4-5
2.	Percy J. Drummond, 2 1-4-h.p. Indian	1:15 2-5
3.	B. S. Barrows, 1 3-4-h.p. Indian	1:19 2-5
4.	George W. Holden, 1 3-4-h.p. Indian	1:21 2-5

CLASS II.

1.	Albert Book, 4-h.p. Curtiss	1:04 1-5
2.	Stanley T. Kellogg, 2 1-4-h.p. Indian	1:17
3.	Fred Littlefield, 4 1-2-h.p. F. N.	1:17 4-5
4.	George W. Holden, 1 3-4-h.p. Indian	1:18

CLASS III.

1.	G. H. Curtiss, 7-h.p. Curtiss	0:55
2.	Stanley T. Kellogg, 4-h.p. Indian	0:59 4-5
3.	Percy J. Drummond, 3 1-2-h.p. Indian	1:01 4-5
4.	J. P. Bruyere, 7-h.p. Peugeot	1:09 1-5

CLASS IV.

1.	G. H. Curtiss, 7-h.p. Curtiss	0:56 2-5
2.	Stanley T. Kellogg, 8-h.p. Indian	0:58 1-5
3.	Albert Cook, 4-h.p. Curtiss	1:03
4.	J. P. Bruyere, 7-h.p. Peugeot	1:10 2-5

AUTO RECOGNIZED AS A LEGITIMATE ENGINEERING STUDY

BY Charles B Hayward

INDIANAPOLIS, IND., June 1.—For the first time in its history, the American Society of Mechanical Engineers has officially set its seal of approval on the automobile by recognizing the fact that it is a legitimate subject for engineering study. This means more than would appear at first sight, for in the history of the organization in question is written much of that of mechanical engineering as a whole in this country.

Wednesday was automobile day and the afternoon was devoted to visits of inspection. There was the alternative of taking in the plant of the Atlas Engine Works and with it that of the National Motor Vehicle Company, or of making a visit to the Nordyke & Marmon Company and another concern. A rising vote taken at the morning session was practically unanimous in favor of the former, and the engineers, three hundred strong, were toted out to the suburbs in special cars provided by the trolley service. The Atlas Engine Works are one of the oldest builders of steam engines and boilers on this side of the Atlantic, and in the widespreading plants, with hundreds of engines of all sizes in every stage of construction, the engineers found themselves in a familiar element. Though pioneers in the steam engine field and one of the large factors in it to-day, these builders have looked ahead and, recognizing the inevitable, have prepared for it. The gas engine department has already assumed large proportions and active preparations are now said to be under way, looking to the manufacture of automobile motors on a large scale. As has been its policy heretofore in the steam and gas engine field, nothing but the engines themselves will be built and they will be put through in quantities.

First Visit to an Automobile Factory.

From the Atlas works to the plant of the National Motor Vehicle Company is but a few minutes walk, and the engineers bent their steps in that direction with an eagerness born of curiosity, for they were about to enter upon what was to them an entirely novel field. The National people had taken this into account, for in addition to providing a liberal quantity of circus lemonade, they detailed several of their own engineering force to act as pilots and explain things. It was a pretty warm day and the pink lemonade was a welcome cooler after a trip through a big foundry, but the "Explanationers" proved the most welcome bit of foresight on the part of the entertainers, for the visitors with few exceptions were like so many schoolboys when it came to things automobile. It was really more entertaining to watch the entertained than to try to take in the details of the plant itself. A group formed with a six-cylinder National chassis as its center was a point of interest to which I attached myself and was well rewarded. Its members had been admiring the compact and finely finished power plant concentrated in such a small amount of space and with no superfluous detail, when one of them—a big, husky fellow who looked as if he could have walked off with the engine under his arm without much difficulty—took occasion to ask what the power of the motor was.

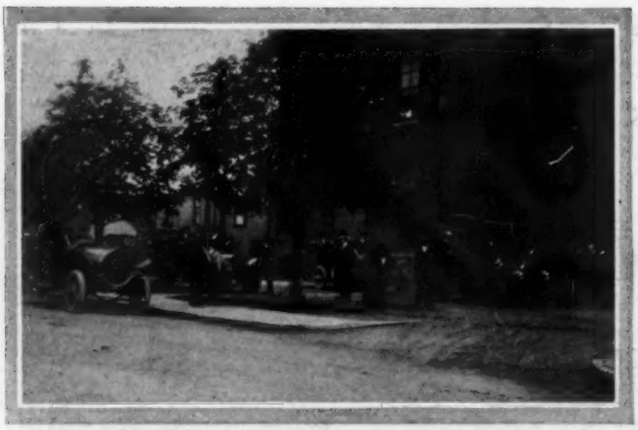
"Seventy-five horsepower," replied the automobile engineer nonchalantly. "Seventy-five!" his interlocutor almost gasped. "But do you mean *brake horsepower?*" he came back, his look of incredulity reflected in the faces of the entire circle.

"Oh yes, they have to tune up better than that on the brake test in order to pass inspection. We have had them show as much as ninety horsepower on the brake for very short periods, but all of them exceed their nominal rating on test by at least ten to fifteen per cent."

With visions of the two or three tons of metal that represent the groundwork of a stationary engine of similar capacity in mind, the engineering contingent could only express its admiration and wonder in dumb amazement. Passing on through the various departments, chassis frames were felt and examined with many a headshake over the slightness of the metal forming their members, the gear and dashboard castings were toyed with, marveling at the great discrepancy between their bulk and avoirdupois like so many schoolboys.

Close Study Devoted to Details.

Next to the motors and the chassis in course of erection, which were probably the most unfamiliar objects, the details of the change speed gear and the rear axle unit came in for attention, for here at least was something more familiar though its application was a decided novelty. Here again the features of compactness, the ingenuity shown in design and operating methods



ONE OF THE INSTALLMENTS AT THE NATIONAL WORKS.

as well as the lavish use of the most expensive metals and jewel-like ball bearings called forth no end of admiration. They were at a disadvantage, these engineers. They had to let their guide talk without being able to do much talking back, for in all the interested groups I took in I only ran across one who could talk automobile through being the possessor of a car. Probably there were others, but for the most part the visit represented an initiation to the genesis of the automobile. The testing cars with their rough and ready fittings and the dynamometer rigged for testing the power output at the driving wheels of the completed car represented objects of unending interest.

Motors Under Test Proved Instructive.

As they finished their rounds of inspection of this part of the plant, the various installments were bundled into waiting cars and given a two or three-mile drive through the residential section of the city over to the motor-building department of the National works. The transportation of such a contingent naturally taxed the facilities of the plant to provide cars, and a Premier or two, with a Rambler, formed a scattering representation loaned for the occasion to help out. If anything, this part of the plant was more interesting than that in which the complete cars were assembled. Here the motors were to be seen at every stage in the process of construction, from the rough casting straight from the foundry to the complete motor on the testing block, and a dozen or more of the latter of both fours and sixes that were running full blast at the same time gave some idea of the rate at which they were being turned out. The center of attraction in the long testing room was the electric dynamometer with its water resistance to absorb the power developed. A four-cylinder motor was undergoing test at the time and the attendant in charge put it through its paces for the benefit of the visitors. The inspection completed to the satisfaction of all concerned, the roar of the testing plant was left behind for another ride in the cars back to the Claypool, giving an excellent opportunity to take in the fine four and a half mile oiled boulevard. Your Indianapolis chauffeur is a true representative of the genus—he lets her out whenever an opportunity offers, but he can pick up the scent of a mounted copper just as far away as any of his kind, and the discreet pace and solemn mien with which he passes the stern-visaged minion of the law are models of innocence and propriety, not but that the peeler has his own suspicions and he shows it, too, but he has to land the sinner "with the goods."

During the afternoon the "lady engineers" had not been forgotten, the same contingent of cars that was later impressed into service between the departments of the National works and as transportation back to the hotel were marshaled along the curb at the latter and used to carry bunches of fair femininity out to the Indianapolis Country Club. When the ladies returned in the evening they were of one opinion that arrangements could not have been engineered more efficiently nor pleasantly, due to the energy and foresight of Mr. Wall, of the sales department of the National company, who was in charge of the automobile transportation arrangements for the whole contingent.

Papers Were of Absorbing Interest.

The Wednesday evening session was devoted to the reading of papers by engineers who have long been identified with the progress of the automobile. The papers presented were those on "Bearings," by Henry Hess, of the Hess-Bright Manufacturing Company; "Special Steels," by Thomas J. Fay, and "Materials for Automobile Work," by Elwood Haynes, of the Haynes Automobile Company, one of the deans of the American industry. Mr. Hess' paper was profusely illustrated with lantern slides, showing current types of gear-set construction and mounting as exemplified by the best in American and foreign practice, ball-bearing crankshafts of various types, and the like.

Mr. Fay's paper brought home for the first time to mechanical engineers who have only known the automobile as laymen the tremendous amount of work that has been concentrated on the study and production of special steels in a few years as the result of the widespread and pressing demand for automobile construction, while Mr. Haynes' lengthy experience in automobile building was reflected in his able outline of the subject of materials, dating as it does back to the time when the very commonest necessities of automobile construction were unknown and manufacturers had to turn out everything they needed down to the most rudimentary detail. All the papers proved of absorbing interest. John Wilkinson, of the H. H. Franklin Manufacturing Company, was down for a paper on the "Air-Cooling of Automobile Motors," and B. D. Gray, of the American Locomotive Works, for one on "Railway Motor Cars," but, unfortunately, neither was able to be present.

Of course, there were meetings and the like scheduled for Thursday, but an event that was not down on the program took the attention of the engineers in a body during the afternoon. President Roosevelt arrived in Indianapolis in the morning and after being escorted about by an imposing parade took part in the unveiling ceremony of the Lawton monument, and the engineers came early to listen to his speech. On Friday the whole contingent went to Purdue University at Lafayette, where the papers on superheated steam were read, points on superheated steam practise as exemplified in the White automobile being brought out in the discussion. An impromptu visit by some of the engineers to a nearby chicken factory was not on the program either and resulted in a learned discussion of the thermal efficiency of the incubator and brooder.

PRESIDENT ROOSEVELT "SPEECHIFYING" AT LAWTON MONUMENT.

AIR COOLING OF AUTOMOBILE ENGINES*

By JOHN WILKINSON, Chief Engineer, H. H. Franklin Mfg. Co.

THE result always first met by the investigator of the air-cooled engine for automobile work has been that the motor became too hot for proper operation, and therefore the problem has been to find out how overheating manifests itself and how to overcome the fault.

2. Overheating shows itself in quite a number of ways. The cylinder may become so hot that as a result the incoming gases expand so much that there is a reduction in power owing to the

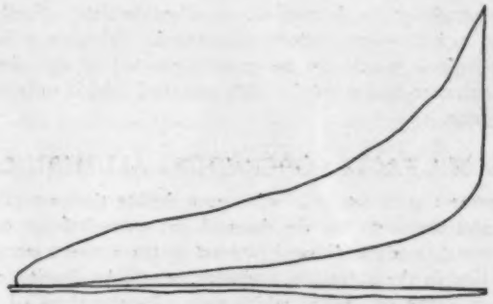


FIG. 1.—A normal manograph card under full load.

smaller amount of air and gasoline taken in; the heat may be so high that the lubricating oil will fail to perform its proper functions, causing an increase of friction which still further heats the cylinder and reduces its power.

3. This has been proved by introducing such a lubricant as graphite, which is not influenced by heat, onto the cylinder walls after the power has dropped, and noting the almost instantaneous recovery of the power. The piston head may become expanded so much that it will seize. The incoming charge may become so heated by the walls and by compression that it is ignited prematurely.

4. This generally occurs at a low engine speed and is indicated by energetic knocking. Indicator cards taken by the monograph under these conditions show the pressure to have risen very much higher than normal, indicating that a true explosion may have taken place.

5. Fig. 1 represents an ordinary monograph card, and Fig. 2 shows the high initial pressure due to premature ignition from heat.

6. Again, some projection in the cylinder of metal or accumulated carbon, or more often a red-hot exhaust valve, may cause a premature explosion at high speed, or even a burning of the charge on entering the cylinder. This may also produce the same effect at low speed as is shown on Fig. 2. It is therefore necessary to apply such remedies as may obviate as much as possible the above conditions.

7. In order to keep the temperature of the cylinder walls within working limits, it is evident that the design must be such that either less heat must be allowed to enter the walls or more must be carried off, or both of these results must be accomplished.

8. Getting less heat into the walls involves one of the fundamental principles of the economy of the gas engine, and is best accomplished by reducing the internal surface exposed to combustion to a minimum which means principally to design the combustion chamber as nearly spherical as possible.

9. If the internal surface is less, the less the incoming charge is heated and the less heat is lost to the cylinder walls; therefore the greater the power and efficiency; the less heat it is necessary to carry off from the walls to keep them at a working temperature. This fact does not yet seem to be well recognized, and we still see engines built with a valve pocket on each side of the cylinder.

10. The internal surface exposed to heat at the time of explosion in a 4" x 4" motor with a semi-spherical cylinder head is about 38 square inches; in the same motor with a valve pocket on either side of the cylinder about 74 square inches, and a good part of this surface has to be left rough. It is self-evident that the jacket loss must be much greater in the last instance.

11. Engines with a semi-spherical head will show a gain of 25 per cent. in power and efficiency over the prevalent type with a valve pocket on each side. This type of cylinder head may also be machined smooth on the inside to reduce its absorbent effect to a minimum.

THE EXHAUST GASES.

12. In passing out of the cylinder these gases raise the temperature of the exhaust valve often to the point of premature ignition, and give up their heat to the metal adjacent to the valve and to the valve passages.

13. If a port is made at the bottom of the stroke, a large part of the exhaust will pass out here before the main exhaust opens, and the pressure will drop to atmosphere by the end of the stroke. Therefore, the temperature of the gases passing out at the exhaust valve will be greatly reduced.

14. The exhaust passages contiguous to the cylinder should also be made as short as possible.

15. Fig. 1 shows a manograph card taken from a 4"x4 1-4" engine with an exhaust opening 40 degrees before the end of the stroke. Fig. 3 shows a card of a 4" x 4" engine, with auxiliary exhaust opening at the same point.

The best internal conditions may be summed up as follows:

a To present the minimum internal surface to the heat.
b To make this surface as smooth as possible.
c To carry off the hot exhaust gases at the bottom of the stroke before the main exhaust valve opens.
d To get rid of what is left with as little surface contact with the cylinder as possible.
e To reduce the friction of piston on the cylinder to a minimum.
f To keep all projections out of the cylinder.
g To make the compression just right to fit all other conditions.

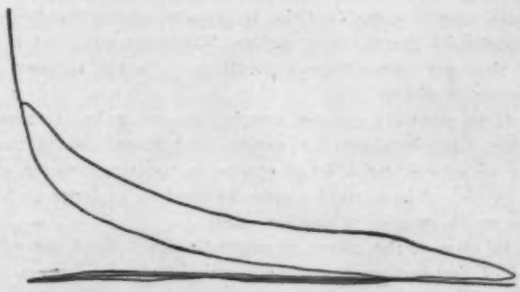


FIG. 2.—Premature ignition manograph card due to overheating of engine.

16. The above represents the *science* of air-cooling in regard to the internal conditions of the cylinder as far as the writer understands it.

17. There still remain the external conditions which, outside of the fact that the more circulation of air the better, have not yielded results that can so confidently be asserted as correct.

18. What the form, position, and material of the outside surface shall be has not been reduced to a positive science.

19. If we try to make the cooling surface part of the cylinder

*Paper presented at the Indianapolis, Ind., meeting of the American Society of Mechanical Engineers.

casting, we meet great difficulties in the way of unsound casting, insufficient area, and too much weight. If we attach pieces of copper or other good conduction metal in the form of rings or studs, it is very necessary to take great care to make an extremely good mechanical joint. No one has yet succeeded in brazing or soldering such material to the cylinder in satisfactory form. An ideal cooling medium would be a finely and equally spaced growth of copper hair metallically joined to the cylinder.

20. A still further complication of cooling is presented by the necessity of using a four-cylinder motor placed longitudinally in the car.

21. If it is attempted to cool this design by the general circulation of a fan in front, each cylinder tends to keep the air away from the next and to radiate its heat to its neighbor, and the cooling medium gets warmer as it gets toward the rear, decreasing its cooling power. It is therefore necessary to increase the cooling surface toward the rear of the engine; cylinder No. 3 requiring the most attention, and No. 2 requiring somewhat less, and No. 1 requiring very little surface, showing the efficiency of a rapid circulation on an unobstructed cylinder.

22. If we use a blower and drive the air separately over each cylinder, a large amount of power is absorbed by the blower, and a piping system of considerable complication is needed. It also has one of the weaknesses of the water-cooled motor, namely,

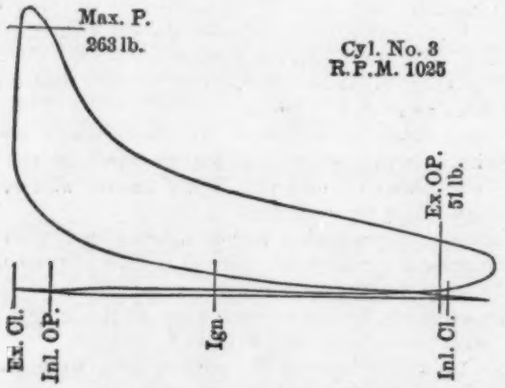


FIG. 3.—Manograph card showing effect of auxiliary exhaust openings.

the danger of ruining the motor by the breakdown of the circulating mechanism.

23. In regard to the size of the air-cooled motor that could be used in an automobile, an investigation of the relative sizes of the internal surfaces, volumes, and speeds of two similar engines seems to show that the larger the engine the lower the temperature of the cylinder walls. The only parts of a large engine that get hotter than a small one are the exhaust valve and center of piston.

24. If an auxiliary exhaust port is used, the exhaust valve gets no hotter than in a smaller engine, and therefore the limiting feature of air-cooling a large engine is the temperature of the piston center. I have used 4-cylinder engines as large as 5" x 5" with as much success as smaller ones.

25. In view of the above, it might be asked what can actually be said of the performance of air-cooled motors in practice. A 4-cylinder 4" x 4" motor with a clearance space of 26 per cent. of total volume delivering at the brake:

21 horsepower at 1,000 revolutions and
27 horsepower at 1,500 revolutions

or 1 horsepower for each 7.4 cubic inches of displacement at 1,090 feet per minimum piston speed will positively meet every condition of road use, and we hope to see in the near future 30 horsepower at 1,000 feet piston speed or 1 horsepower for each 6 2-3" piston displacement. This, so far as the writer knows, is as good as is commercially produced in a water-cooled engine of the same size and of the most efficient type.

26. As to the heat efficiency of a motor of this size, tests show it to be as high as 20 per cent., which represents 0.7 pounds of gasoline per brake horsepower hour.

27. In so much as the air-cooled motor we are talking about is meant to use only on a road vehicle, it must stand or fall on its merits as such. It would not be reasonable to assert that an engine can be kept as cool with air as with water, and it is not desirable to do so anyway, as the efficiency will be higher with the hot motor.

28. The air-cooled motor is correct in theory in that it directly cools by the air, and the ordinary type is simpler, lighter, cheaper and proof against extreme cold and extreme heat. In respect to its cooling it is not dependent for its safety on any working mechanism. Even with the loss of its fan it can generally be brought to its destination on schedule time. Such faults as it has had have been slowly eliminated. Whether it has any inherent defects which can never be corrected is very doubtful, and its entrance into even the high-powered field is only a question of time.

SOME FACTS CONCERNING ALUMINUM.

The great rise in the price of copper during the past year and a half, and the fact that the demand has exceeded the supplies of this metal, lends additional interest at the present moment to the position in the aluminum industry, says *The Engineer*. For aluminum is the one metal which may take the place of copper in many of the arts and industries, and the recent enormous increase in the demand for aluminum is probably connected with the high prices ruling in the copper market. It is noteworthy that this metal, which down to the year 1889 was produced only by chemical method, and was looked upon more or less as a curiosity, is now manufactured at the rate of 12,000 tons per year in works controlling over 96,000 horsepower, and that the output is rapidly increasing. Since the relative specific gravities of aluminum and copper are in round numbers in the ratio of 1:3, it follows that the annual output of aluminum at present is equivalent in volume to 36,000 tons of copper. Two of the larger companies producing the light metal are, however, arranging to double, or even treble, their water-power and reduction plants at an early date, and the production of aluminum in the year 1909 may quite possibly rise to 24,000 tons per annum, or to the equivalent in volume of 72,000 tons of copper. The possibility of aluminum or its alloys supplanting copper in many of its applications is, therefore, not so remote as many engineers might suppose, and the fact that in the form of oxide it is one of the commonest constituents of the earth's crust would seem to indicate that it will occupy a position of increasing importance in the metallurgy of the future. The most important factor in this increase will be a reduction in price due to cheapened methods of production. At the present time the ingot metal is selling for $1,000 per ton, or at the rate of 43 cents per pound, and is the equivalent in volume of copper at $335 per ton. Owing to the greater difficulty of working aluminum, and the necessity for using it for many purposes in the form of alloys, the practical difference in cost of the metals is less, however, than is indicated by these figures. There is good reason to suppose that aluminum can be produced, even now, at a cost of 24 cents per pound, or $560 per ton. Should a simpler method of preparing the aluminum oxide for the electrolytic bath be discovered, this first cost may be reduced to 16 to 18 cents per pound, equivalent to $375 or $420 per ton.

WHERE ASBESTOS IS MINED.

Asbestos is mined in open pits similar to stone quarries, and, although it is found in all parts of the world, the mines in Quebec are the most famous, yielding about 85 per cent. of the world's supply of chrysotile. In 1879 the output of the Quebec mines was 300 tons, which has steadily increased year by year to 50,000 tons in 1905.

SOME FEATURES OF AUTOMOBILE CONSTRUCTION*

By THOS. J. FAY, E.E.

THE range of speeds on the 30-inch lathe was fixed the same as the speeds would be fixed for smaller lathes, for small work, and, in fact, the 20-inch lathes ran at the same speed as the 30-inch tools.

It was found that tool steel of almost every make would not stand up, but it was also found that the finer grades of nature-hard tool steel, as "Novo," "Bischoff" and "Krupp Quick Cutting"—air hardened—tool steel held up in a manner most becoming. In the experiment in question, Novo drills and cutters were found to pay for themselves; although, if prayers would reduce the price, one would be tempted to say, *"Let us pray."*

The color of the turnings from chrome nickel steel off the larger sizes of tools are always "blue"—a sample of which is available here for inspection,—and the best way, perhaps, to pay labor is by the color of the turnings; although a machinist on a 16-inch lathe, if paid by color, *would starve to death.*

In designing it would seem as if "lathe work" is by far the easiest of accomplishment, and "milling" is superior to "shaping." There are many pieces in a car that, if carefully looked over, can be more nearly finished on a lathe, and, as a rule, lathe accuracy is satisfactory, especially if "finishing" is done on a grinder subsequently.

As regards the question of the need for the finer grades of steel in motor car practice, everything depends upon the car and the service. A high-powered heavy car certainly will be superior, if perchance certain of its most important parts are alloy steel, and, too, it is believed, the extravagant use of fine steel is a *better* mistake to make, than to inflict a Bessemer steel crank-shaft, for illustration, on an unsuspecting purchaser.

Springs have been a great source of annoyance to most every builder of cars, and it is now quite plain to be seen that the carbon steel railway springs of ancient vintage will not suffice, excepting for low-powered light runabouts.

A good and much-used railway spring formula is as follows:

SPRING STEEL

Carbon	0.80+
Silicon	0.12−
Sulphur	0.035−
Phosphorus	0.80−
Manganese	0.80−
Arsenic	0.12−
Copper	Trace

This grade of material is medium good, and serves for springs in places indicating the use of carbon steel. The average motor car indicates the use of alloy steel for springs, and a recent American alloy steel spring product promises to serve the purpose extremely well, the analyses of which, as now known, being as follows:

	I	II	III
Chromium	0.99	1.31	1.25
Nickel	1.17	1.65	2.00
Tungsten	1.02	1.31	1.00
Carbon	0.20	0.25	0.35
Silicon	0.037	0.056	0.23
Sulphur	0.017	0.011	0.041
Phosphorus	0.018	0.013	0.023
Manganese	0.23	0.12	0.17

These analyses show every indication of fine steel, and the reports thus far are of a far better tone than any of the carbon steel performances. The physical properties of this steel are about as follows:

T. S.	*E. L.*	*Ex.-2"*	*Con.*
155,000	150,200	16	47

which, for normal steel, is a very satisfactory condition.

Side frames are, as yet, a more or less unsatisfactory quantity, mostly because there is no standard, and changes are at once noticeable. Foreign cars, of the latest vintage, show very heavy side frames, with very wide flanges, largely for effect. Some of the best of the foreign side frames are of what is known as C 46-0 Krupp steel, the physical properties of which are given by "Krupp" as follows:

T. S.	*E. L.*	*Ex.-2"*	*Con.*
114,600	93,300	17	55

There is one excellent "French" product, but little used, however, as follows:

CHEMICAL COMPOSITION

Nickel	*Carbon*	*Silicon*	*Sulphur*	*Phosphorus*	*Manganese*
4½	.25	0.13	0.014	0.013	0.35

PHYSICAL PROPERTIES

T. S.	*E. L.*	*Ex.-3.9"*	*Con.*
121,000	108,000	14	42

In some American cars, as the B. L. M., and possibly others, as well as such of the cars as the speaker is now engaged upon for Mr. Ellsworth, the chassis frame stock is made of E. F. 60.0 Krupp chrome nickel steel, the normal properties of which are as follows:

CHEMICAL COMPOSITION

Chromium	*Nickel*	*Carbon*	*Silicon*	*Sulphur*	*Phosphorus*	*Manganese*
1.50	3.50	.25	.20	.025	.012	.40

The normal physical properties are as follows:

PHYSICAL PROPERTIES

T. S.	*E. L.*	*Ex.-2"*	*Con.*
110,000	95,000	20	44

It will be understood that rolled into sheets, this product increases in tensile strength and elastic limit enormously. As regards the hot and cold bending test, enough is to say, it will barely stand 180° and hammering down flat; in fact, some proof falls short of this exacting test.

One more product for side frames that has been used with good success is that known as Firebox Steel, as follows:

CHEMICAL COMPOSITION

Carbon	*Silicon*	*Sulphur*	*Phosphorus*	*Manganese*
.15	.10	.40	.04	.30 to .50

Carbon subject to change to give physical properties:

T. S.	*E. L.*	*Ex.*	*Bend Test*
52,000 to 62,000	32,000+	26+	180° and hammer down flat, without any sign of cracking, both hot, red and cold

In any case, chassis frames are entitled to far more consideration than they have been accorded, in some cases at any rate, and it is not believed that good steel will be likely to put the cost so high as not to be tolerated.

The question of ball bearings will no doubt be handled admirably by Mr. Hess, and the speaker desires only to bring out one point that may be of general interest aside from ball bearings. It is generally conceded that the quality of the material used in certain ball bearing races is something out of the ordinary, and while it has changed from time to time, yet even so it can be set down as a chrome-wolfram steel, and not a chrome nickel steel product. The most recent information on the subject of this remarkable grade of steel was received by the speaker from his assistant, Mr. Jos. Schaeffers—now in Germany—giving the main chemical contents as follows:

Chromium	1.5%	Carbon probably between 0.20 and 0.30 per cent.
Wolfram	1.0%	
Copper	0.01%	
Nickel	None	

As to the presence of copper, it is by design; as to its real advantage, it is difficult to say. The normal physical properties of this steel may be put down as follows:

T. S.	*E. L.*	*Ex.*
160,000	156,500	16

* Paper read before the Society of Automobile Engineers. Continued from page 888, issue of May 30.

While this product, when heat-treated, could reach to marvelous heights, as for illustration, *"double the normal tensile strength,"* that this steel would serve admirably for certain other work, as piston pins, gears, and such other parts as are subject to high pressure and shock loads, should be a reasonable expectation. Unfortunately, however, it has been exceedingly difficult to procure this product, manufactured as it was for an exclusive trade, or better yet, *in spite of an excluded would-be trade.*

"If you want to get acid open hearth steel low in sulphur and phosphorus, it must be at the expense of good raw material, and I claim that the misfortune of the mill in that connection is our fortune, because if we specify acid open hearth steel, and limit the phosphorus and sulphur to a low point, we will have procured steel from good raw material. That is assuming we get what we ordered."

. Aluminum for motor cases, gear boxes and like parts is scarcely better than it ever was, and it never was strong; in fact, a reasonable expectation from the strength point of view is a maximum at 16,000 pounds per square inch, and 9,000 pounds per square inch will be in imminent danger. The elastic limit of cast aluminum is not as a rule a reasonable quantity and the elongation is nominal.

In the *Horseless Age* of January 9, 1907, E. F. Lake reported the strength of aluminum castings as follows:

TEST NO. 1

T. S.	*E. L.*	*Ex.-4"*	*Con.*
21 000	8,400	8.25%	9.5%

TEST NO. 2

T. S.	*E. L.*	*Ex.-4"*	*Con.*
30,200	17,600	2.75%	5%

These values are utterly impossible of attainment in castings in a commercial way, if at all, nor do they accord in principle with the characteristics of aluminum castings; in fact, it is such tests that gave to aluminum a bad reputation, whereas, if designers will take into account its low strength, they can reduce weight by its use, but they can also court serious trouble by taking inflated values into account. The true strength of aluminum castings is reflected in the tests as follows:

"A"—CHEMICAL COMPOSITION

Aluminum	*Copper*	*Manganese*	*Iron*
91.24	5.44	2.48	0.40

PHYSICAL PROPERTIES

T. S.	*E. L.*	*Ex.-8"*	*Con.*
9,390	9,390	0.16	———

Test proof 1 inch square. Test by Robt. W. Hunt & Co. for the writer:

"B"—CHEMICAL COMPOSITION

Aluminum	*Copper*	*Zinc*	*Iron*
95.4	2.11	1.36	Trace

PHYSICAL PROPERTIES

T. S.	*E. L.*	*Ex.-8"*	*Con.*
9,176	9,176	0.13	———

Test proof 1 inch square. Test by Robt. W. Hunt & Co. for the writer. Motor case of this product broke in service.

Of all product testing higher, the foundry failed to make good castings, and it is doubtful if the foundry can. At the present time the foundry furnishing castings of aluminum for such work as the writer directs does so with the understanding that the tensile strength shall not be more than 16,000 pounds per square inch, and it is doubtful if this value is reached.

Manganese bronze is, of course, superior for such work, but it weighs more. The strength of this product is within the limits as follows:

MANGANESE BRONZE—PHYSICAL PROPERTIES

T. S.	*E. L.*	*Ex.-2"*	*Con.*
65,000	30,000	20	25
75,000	35,000	25	30

The relation of weights is given by Lake as follows:

SPECIFIC GRAVITY

Cast aluminum	2.85
Cast iron	7.218
Steel castings	7.919
Cast brass	8.320
Cast bronze	8.832

These figures will serve as a guide in estimating the advantages of aluminum from the weight point of view, but:

$$\frac{8.832}{2.85} = 3.098$$ ratio of weight in favor of aluminum;

on the other hand, the ratio of strength would be approximately

$$\frac{70{,}000}{10{,}000} = 7 \text{ to } 1 \text{ in favor of bronze,}$$

and the ratio of cost would be:

$$\frac{65}{32.5} = 2 \text{ to } 1 \text{ in favor of bronze.}$$

Result: Three hundred and nine pounds of bronze would do the work of 700 pounds of aluminum, with equal liability to rupture, making the section in the ratio of one to seven, and the cost $100.42 for bronze and $445 for aluminum, although it is fair to say it is rarely possible to make the section of bronze so much thinner than aluminum, nor would one care to do so, since greater strength than aluminum affords is much to be desired. Nevertheless, 'tis well to know the lay of the land.

WHY STEEL CHANGES CHARACTER IN HEATING.

(1) When a piece of steel is heated in connection with a pyrometer, its temperature is seen gradually to rise until 720 degrees C. is reached, when the instrument remains stationary for a short time—showing an abnormal absorption of heat by the specimen; the pyrometer needle then resumes its journey, says *The English Mechanic.* If the piece now be allowed to cool, a point is reached at 680 degrees C. where the pyrometer again arrests, indicating an abnormal evolution of heat; this is called the recalescence, and the temperature of the steel often rises to such a degree that it can be seen to glow. (2) When carbon is added to iron, either by cementation (as in case-hardening) or by melting together in a crucible, a definite carbide of iron is formed (Fe_3C.). If a piece of carbon steel be heated to 720 degrees C., the carbide which it contains dissolves in the mass, and forms a solid solution of carbide of iron in iron, accompanied by an absorption of heat. On cooling suddenly this solid solution is retained in the cold, and the steel is hard. But suppose after passing through the arrest point on heating that the steel be allowed to cool gradually, then at 680 degrees C. the carbide of iron crystallizes out with evolution of heat. Under the microscope the cold steel now is seen to consist of separate particles of carbide of iron and iron *per se.* In this condition the steel is soft. So that the degree of hardness obtained after heating to above 720 degrees C. depends upon (a) amount of carbon contained by the steel, (b) rapidity of cooling. Notwithstanding all the published nostrums, there is no virtue in the chilling liquid beyond the degree of rapidity with which it can absorb the heat from the steel. Tempering simply consists in heating hardened steel until the desired amount of carbide has fallen out of solution. The effect is similar to a mild quenching. Tempering colors are simply surface oxidation effects, used as rough temperature indicators, the colors varying with the depth of oxidation, and consequently with the amount of heat remaining in the steel. Annealing consists in heating the steel to a point below 720 degrees C. and slowly cooling, so that all the carbide may fall out of solution. The above must only be taken as a rough outline of the theory; there are often complicating factors.

EFFECT OF SIZE ON THE THERMAL EFFICIENCY*

By H. L. CALLENDAR, F.R.S.

THE thermal efficiency of an internal combustion motor, defined as the ratio of the work done to the equivalent of the heat of combustion, is limited chiefly by two sources of loss. (1) Part of the heat is necessarily lost during ignition and expansion to the cooler walls of the cylinder. (2) The heat remaining in the exhaust gases at the end of expansion is rejected unused. Losses of the first kind depend on the temperature of combustion, on the surface exposed, and other conditions, and are in part avoidable. Losses of the second kind depend chiefly on the properties of the working fluid and on the limitations of expansion, and are in a sense unavoidable. The loss of efficiency from this cause may be calculated for any given conditions in a manner which is well understood. Losses of the first kind cannot be directly calculated in any simple manner, but may be deduced by comparing the performances of actual engines with those of ideal engines in which losses of the second kind are calculated and allowed for. In discussing losses of the first kind, which form the main subject of the present paper, it is therefore necessary first to consider briefly the case of an ideal engine in which there is no loss of heat to the walls of the cylinder, but only the necessary loss due to incomplete expansion.

Air Standard Efficiency.

For an internal combustion engine in which the ratio of expansion is equal to that of compression, assuming the working fluid to possess the properties of a perfect gas of constant specific heat, and supposing that there is no loss of heat to the walls of the cylinder, the fraction of the heat of combustion rejected unused at the end of expansion is given by the ratio T''/T' of the absolute temperature T'' at the end of expansion to the maximum temperature T'. The thermal efficiency, or the fraction of the heat converted into work, is $1 - T''/T'$. If the ratio of expansion or compression is denoted by r, and the ratio of the specific heats of the gas by γ, the ratio of the temperatures T'/T'' will be $r^{\gamma-1}$, and the expression for the variation of the ideal efficiency in terms of the ratio of expansion becomes,

$$\text{Idcal efficiency} = 1 - (1/r)^{\gamma-1} \qquad (1)$$

If the working fluid is a mixture of diatomic gases such as air, for which the ideal value of the ratio of specific heats is $\gamma = 1.40$, the value of the index $\gamma - 1$ is .40, and the formula becomes,

$$\text{Air-standard efficiency} = 1 - (1/r)^{.40} = E \qquad (2)$$

If the working fluid is a perfect gas of constant specific heats, but with a different value of the ratio γ, the ideal efficiency will be different from that of the air-standard for the same ratio of expansion. The "Relative Efficiency," or the efficiency relative to the air-standard for the same ratio of expansion, is found by taking the ratio of the efficiency to that of the air-standard.

Relative Efficiency of Actual Engine.

The working fluid in the actual engine is not a perfect gas. It approximates to a perfect gas in that the product of its pressure and volume, pv, is nearly proportional to the absolute temperature T, but the specific heat is not constant, and is not the same before and after ignition. The ratio of the specific heats is different during compression and expansion, and there is a change of molecular volume in the process of combustion. Formula (1) for the efficiency does not therefore apply accurately. Nevertheless, it has been shown by experiment that the variation of efficiency with compression-ratio follows very closely that of the air-standard, or that the relative efficiency of a given engine is nearly independent of the compression-ratio under similar conditions of running. The actual efficiency is found to be about 60 per cent. of the air-standard for an engine of moderate size under good conditions. Part of this defect of 40 per cent. is unavoidable, being due to the fact that the ratio of the specific heats of the products of combustion at working temperatures is much less than that of air; the remainder is chiefly due to loss of heat during ignition and expansion, which depends on the size of the engine and other conditions.

Properties of the Working Fluid.

In order to estimate the unavoidable loss of relative efficiency, it is necessary to consider the properties of the working fluid. The rise of temperature and pressure observed in the rapid combustion of an explosive mixture is only 50 or 60 per cent. of that calculated on the assumption that the whole heat of combustion is developed, and that the specific heats of the gases have the values observed at ordinary temperatures. The defect has been explained by supposing either (1) that the combination is not complete, and that some dissociation persists at high temperatures, or (2) that the specific heats of the products of combustion increase considerably with temperature. The two interpretations are often regarded as diametrically opposed, but it is probable that they are merely different ways of expressing the same thing. It is most likely that all change of specific heat is really due to internal work of molecular re-arrangement, which is a necessary accompaniment of dissociation; and conversely, that no dissociation can occur without an apparent change of specific heat. It is highly probable that some of the products of combustion remain dissociated, or that unstable endothermic compounds are formed in complicated mixtures at high temperatures. But the resultant effect can be consistently represented for the present purpose as an apparent change in the specific heat. Values of the apparent specific heats of various gases have been obtained by Mallard and Le Chatelier and other observers, by observing explosion-pressures in closed vessels. More recently the apparent specific heats of the actual products of combustion in the cylinder of a gas-engine under working conditions have been deduced by Dugald Clerk by a most ingenious dynamical method (Proc. R. S., Vol. 77, 1906) which gives the specific heat directly in terms of work done by the piston in compressing the gas. The conclusion from these experiments was that the apparent specific heat of the products of combustion reached a nearly constant limiting value at a temperature somewhat above 1,000° C., and that the ratio of the specific heats was nearly constant, and equal to 1.29, for the greater part of the expansion curve at ordinary working temperatures. From the values of the apparent specific heat so obtained, Clerk was able to deduce the ideal limit of efficiency of the gas-engine assuming no loss of heat to the walls of the cylinder.

It must also be remembered that, as Burstall and Hopkinson have shown, there are very large differences of temperature existing in different parts of the cylinder of a large gas-engine immediately after combustion is complete. The data for the specific heats at the higher parts of the range, approaching 1,600° C., are therefore more uncertain and difficult to obtain, and may be affected by constant errors. If the specific heat does not reach a limit, but continues to increase at higher temperatures—as other experiments appear to indicate, and the phenomena of dissociation would lead us to expect—the limiting value of the relative efficiency (assuming no heat loss to the walls) would be less than 0.80. We may conclude on this ground that *at least 20 per cent.* of the defect of the actual efficiency from the air-standard is to be explained by the properties of the working fluid, and is therefore unavoidable.

Variation of Efficiency with Size.

It is generally admitted that, other things being equal, a small engine is less efficient than a large one. Both the thermal and the mechanical losses are greater in proportion in the smaller engine,

*Extract from paper read before The Institute of Automobile Engineers, London.

but of the two the thermal losses are usually the most important. The most obvious method of investigating these losses in relation to size is to make a number of experiments on similar engines of different sizes under similar conditions, and to obtain an empirical formula to represent the results as a function of size.

It is a very difficult matter to obtain a series of exactly similar engines of widely different sizes, and to ensure that the trials are made under precisely similar conditions. A less direct method which should be employed in conjunction with the first, is to study the variation of the losses under widely different conditions in a single engine, so as to investigate the effect of different conditions of running, and to deduce, if possible, the laws of variation of the losses in question.

Experiments with a Small Motor.

In order to study this question from a theoretical point of view, I undertook a series of experiments about three years ago with a very small motor, 2.36 inches bore. The motor was fitted with an indicator capable of working with a high degree of accuracy up to a speed of 2,500 revolutions per minute. A number of thermocouples were inserted in the walls of the cylinder for observing the temperatures and estimating the losses in different parts of the cylinder. Fans were arranged for regulating the temperature, and electric and mechanical brakes for measuring the load. There were several advantages in employing a motor of this type. Owing to its small size, the losses to be investigated were greatly exaggerated, and were therefore rendered easier of detection and measurement. The conditions could be very easily and quickly varied through a very wide range as regards speed, load, etc. There was no water jacket to equalize artificially the temperatures of different parts of the cylinder, or to interfere with free access to anything. Many reliable experiments were available for comparison on other types of motors, but the small petrol motor afforded a comparatively new field. I can only give general results so far as they affect the point at issue.

Variation of Heat Loss with Speed and Temperature.

It is very commonly assumed in considering loss of heat from a gas to a surface that the rate of loss is proportional to the temperature-difference and to the surface exposed. This is true for static conditions and small differences of temperature, but is not even approximately correct in the problem under discussion. If it were true, the relative efficiency of an internal combustion engine would be independent of the size and the flame-temperature, and would increase indefinitely with the speed—results which are known to be incorrect. As a matter of fact, the conductivity of a gas increases very rapidly with temperature, which makes the heat-loss at high temperatures much greater than in simple proportion to the temperature-difference, and explains the loss of efficiency with increase of flame temperature. Part of the heat-loss is due to the fact that a layer of gas close to the surface cannot burn immediately. This would mean a nearly constant loss per explosion. Again, the transmission of heat from a gas to a surface is largely affected by the velocity of motion of the gas, which becomes the principal factor in determining the heat-loss in the cylinder of a gas-engine during combustion, where the motion is turbulent and the velocity high. Since the velocity of motion of the gases in a given engine, other things being equal, varies nearly as the speed in revolutions per minute, it is clear that, on this account, the heat-loss per explosion should be more nearly independent of the speed, and that there should not be any marked increase of mean pressure with increase of speed. There are doubtless many disturbing factors, too numerous to mention, which require careful consideration and adjustment, in order to arrive at the correct result. For very low speeds, the effects of leakage and static cooling tend to reduce the efficiency. For very high speeds ignition lag and gaseous inertia produce the same effect. It is essential to see that the engine gets the same quantity of the same mixture per stroke, and that the maximum pressure is developed at the same point. But if these and other precautions are observed it will be found that the relative efficiency is nearly constant over as wide a range of speed as the design of the engine permits. In any case there will be a very flat maximum value of the efficiency at some particular speed which is not in general far removed from the normal speed of the engine.

Variation of Heat Loss with Size.

Assuming on the above grounds that the greater part of the heat-loss per explosion for a given diagram and flame-temperature is independent of the speed to a first approximation over a wide range, it should be simply proportional to the surface exposed and independent of the time of exposure. This part of loss expressed as a fraction of the heat of combustion should, therefore, vary as the ratio of surface to volume during and shortly after ignition. In other words, the loss of relative efficiency in similar engines of different size under equivalent conditions of running should vary inversely as the linear dimensions. The loss of efficiency may be taken to vary as A/D, where D is the diameter, and A an appropriate coefficient depending on the form of the surface, which remains constant so long as the form is the same. It is well known that any change in the form or extent of the surface of the combustion chamber produces a very marked effect on the efficiency.

The losses may vary from 20 to 40 per cent. They are far from negligible, and must evidently be taken into account in comparing motors of different sizes. Since the B.H.P. values are in all cases the most reliable and the most easily determined, and since the formula appears to represent them satisfactorily, we must assume that the variable part of the mechanical efficiency can be represented by the same type of formula as the variable part of the thermal losses. This effects a considerable simplification in applying the formula.

The considerations above discussed have an important bearing on the question of a rating formula. For general descriptive purposes it may be admitted that the rating formula adopted by the Royal Automobile Club, namely:

$$\text{Nominal B.H.P.} = 0.40\ D^2 \text{ per cylinder,} \qquad \text{(A.C.)}$$

provides all, or nearly all, that is required. This formula is equivalent to assuming a normal piston speed of 1,000 feet per minute, and a mean effective pressure of 67.2 lbs. per square inch per explosion as corresponding to the B.H.P. There is no doubt that a series of geometrically similar motors, differing only in size, should be capable of running at the same piston-speed so far as the principal inertia stresses are concerned. But if such a formula is applied to the award of prizes in competitions, it may lead to undesirable departures from good design, since considerable advantage may be obtained by varying factors of which no account is taken in the formula. The principal factors unaccounted for in the A. C. rating are, (1) Variation of mean pressure with compression-ratio. (2) Variation of mean pressure with size. (3) Variation of piston-speed with ratio of stroke to bore. It is interesting to consider how far account may be taken of these factors, without unduly complicating the formula.

(To be concluded.)

FINISHING AUTOMOBILE CYLINDERS.

In spite of all claims of boring automobile cylinders complete at one setting on the machine, I do not believe it is good practice, says I. B. Rich, in *The American Machinist*. Whether they are to be finished by grinding or by a second passage of the boring tool, I believe the castings should be given time to relieve the initial strains as well as the changes set up by removing the inner skin of the casting. And I am naturally pleased to learn that some builders of automobiles are even going further than this. After being rough bored they are placed in an oven or furnace and held at approximately the heat at which they run when in use, for a number of hours. They are then given the finishing cut in the boring mill, and while this may be an unnecessary refinement, it certainly seems as if the cylinders should keep their shape better in actual service.

LETTERS INTERESTING AND INSTRUCTIVE

Advisability of Changing the Driving Ratio.

Editor THE AUTOMOBILE:

[770.]—I have a 1906 Maxwell speedster, 10 to 12-horsepower, with a maximum speed of 50 miles an hour. It is geared 3 1-2 to 1. If I change the gearing to 4 to 1, how much will it reduce the maximum speed? Also, how much will it reduce speed on low gear? How much increase in power would I get for low grades and muddy roads? I prefer power to speed, so would it pay to make the change? Please answer through "Letters Interesting and Instructive." SUBSCRIBER.

Salt Lake City, Utah.

You do not state in your letter what size wheels your car is equipped with, but assuming that the latter are 30 inches in diameter, the cars speed on the direct drive would be reduced by more than 25 per cent., provided, of course, the motor speed was the same in both instances. With your present gear of 3 1-2 to 1 the motor must make 1,900 to 2,000 r. p. m. for the car to attain a speed of 50 miles an hour; figuring on the same basis, the motor speed would have to be increased to 2,600 r. p. m. or over, in order for the car to attain the 50-mile-an-hour rate with the lower gear. The reduction in speed on the low gear would naturally be proportionate to ratio the latter bears to direct drive.

Strictly speaking, there would be no increase in power, the output of the motor would remain the same regardless of the gearing, so long as it runs at its normal speed. But the capacity of the car to climb hills and negotiate bad roads would be increased in about the same proportion as the speed is increased; in other words, it would be possible to keep the motor running at about its normal speed under correspondingly more adverse road conditions. The question as to whether it will pay to make the change will depend upon the character of the country that the car is most used in. If the latter abounds in hills and bad roads, the fitting of a lower gear would be beneficial for the reasons already set forth, but if there is a great deal of running done on comparatively level roads, there would be an objectionable tendency for the motor to race. The 4 to 1 axle would give plenty of speed for all usual purposes, particularly in a hilly country.

Automobile Fire Engines and Street Cars.

Editor THE AUTOMOBILE:

[771.]—We are constantly reading, in the periodicals devoted to the automobile industry, of automobile fire engines and street cars in use in foreign cities. But we never hear anything of these modern inventions in this country. Is it really true, as I have often heard, that the United States is backward in the development and application of the automobile? If not, what is the explanation of European pre-eminence in these lines?

Ogden, Utah. BRYAN CROSSWELL.

The United States is backward in most experimental work connected with the development of the automobile, though it is the foremost country in the world in the building and use of cars of established quality. Moreover, both the automobile fire engine and street car are in use in this country. Some of the first power-driven fire engines in the world were made in New England, as far back as in 1874 and 1875, and thus antedated practically all automobile invention in all countries. Numbers of motor-driven chemical engines are in use now in different cities of the country and are doing good service, while more are being installed all the time. The automobile street car—or, more properly, the motor omnibus—is running regularly for fares on several routes in New York City, while the so-called "sightseeing" vehicles, now a common spectacle in nearly all large cities, really amount to about the same thing and may be most fairly considered the precursors of more extensive public-service installations, which there is every indication will soon be displacing rail-carried street cars for everything but the longer hauls over hilly territory. It takes time, and the automobile is now reaching such a degree of perfection as will permit extensive commercial applications of it.

Regarding the Woodruff System of Keying.

Editor THE AUTOMOBILE:

[772.]—Under "Letters Interesting and Instructive" will you kindly inform me what is meant by the "Woodruff system of keying," and also describe the "Rites governor?"

The Woodruff system of keying, which is covered by patents, consists in the use of short keys in the shape of a section of a circle, *i.e.*, the underside of the key represents a portion of the arc of a circle, while the upper side is flat, there being a slight portion of the upper part of the key made square by carrying the sides down at right angles to the top a short distance to where they intersect the arc of the circle. The keyway is made to correspond, but instead of being cut longitudinally or parallel with the shaft, as is usually the case, it is cut transversely across the shaft, the number used depending upon the holding power required. This explains the principle in a general way, though it will be understood that more than one type of key is used, and the system as a whole is adaptable to the varying requirements of this class of work. The keyseats are made with specially formed milling cutters. If you wish to learn more regarding this matter, send your address and we will refer your inquiry to the manufacturers.

We do not know the "Rites" governor, nor have we been able to obtain any information regarding it, and will accordingly have to ask if any of our subscribers can enlighten the inquirer on this subject.

Sources of Ignition Current.

Editor THE AUTOMOBILE:

[773.]—Which is the best source of current for the ignition system of an automobile—dry batteries, storage batteries, magneto, or dynamo? What are the especial advantages and disadvantages of each of these, and why is there so much variety in the way different cars are equipped with them? I know that one automobile user will be in favor of one and another in favor of another, and, of course, the individual manufacturer or dealer will argue vigorously in favor of the system he supplies; but is it not possible to base an authoritative decision upon some set of definitely-established, easily-obtainable facts? With the information I possess—and it is, I believe, equal to that possessed by the average automobile user—it is impossible to form a judgment that appeals as sound. Nevertheless, I think if you could give a little space in "Letters Interesting and Instructive" to this subject, it would be a help to a great many of your readers.

Covington, Ky. DR. D. B. MARTIN.

The "best," in one sense, undoubtedly are the dynamo and the magneto—that is, they are the only sources of current which are absolutely self-contained, and require no renewal or recharging. They have, however, their objections, one of which is that their current output varies with the speed at which they are run, which, in turn, varies with the speed of the engine, unless complicated and often undesirable regulating drives are used. Another objection, which comes from the one just mentioned, is that the small current output at low speeds may make for a certain amount of difficulty at starting, especially with the dynamo, which is a worse offender than the magneto in this regard. This difficulty is what leads to the many systems in which the combination of a dry or a storage battery for starting and a magneto or dynamo for running is met with. Dry cells are very satisfactory and reliable, but lack long life, especially when subjected to hard usage in connection with multicylinder engines. They are, though, comparatively inexpensive and readily replaceable almost anywhere. The storage battery is reliable and is capable of delivering a large amount of current on a single charging, but it requires so long for recharging that in steady service a double equipment is practically necessary—one to charge while the other is in use. And the localities where direct current, suitable for recharging, is procurable, are considerably less numerous than they were before the present increasing vogue of alternating-cur-

rent equipments. The price factor counts for much. The low first cost of dry cells practically compels their use on low-priced cars, while the storage battery, dynamo and magneto, or some combination of these, seem to be preferred for the more pretentious conveyances.

Proper Compression Space for Two-Cycle Motor.

Editor THE AUTOMOBILE:

[774.]—I am figuring on making a four-cylinder, two-cycle, 3 1-4 by 4-inch gasoline engine, and am somewhat confused as to the proper size to make the combustion chamber. Will you kindly state through your "Letters Interesting and Instructive" column what size would be the most satisfactory? C. U. I.

Kansas City, Mo.

The requirements of your question are rather ambiguous, as you fail to state what you wish the motor to be most satisfactory for, though from the dimensions given we presume it is intended for an automobile motor and it is further desired to obtain as much power from the completed engine as is consistent with good practice, considering its size and design. In cases where there is no clearance beyond that of the cylinder itself, the compression space may readily be determined by making it a certain proportion of the length of the stroke. As the two-cycle cylinder is perfectly straight and unencumbered by valve chambers or other disturbing factors, this method is applicable. It is customary to make the compression space equal to or less than one-third the volume displaced by the piston, so that in the case of the engine you contemplate building, taking four inches as the length of the stroke, the compression space could be made one inch or less, according to the degree of convexity of the cylinder head, as well as the counterbore, having considerable bearing on the matter. The compression to be used should be established first, as on this will depend the proper proportions of the piston pin, connecting rod and crankshaft.

What Materials Are Used in the Gearless Transmissions?

Editor THE AUTOMOBILE:

[775.]—I would like to ask a few questions concerning detailed features of the gearless transmission, a description of which recently appeared in "The Automobile." First, what metal is used in the construction of the friction plates, and, second, what are the latter faced with? An answer will greatly oblige a two-years reader of your paper. H. V. B.

If you will again refer to the description of the features of construction of the gearless transmission which appeared in THE AUTOMOBILE, issue of May 9, page 788, you will note that this device does not embody any friction plates as such—that is, not in the sense that the term is generally understood with reference to the usual type of friction transmission employing two disks brought together at right angles. This is really a friction transmission of the planetary type employing mutually engaging internal cones and cages of rollers as the friction members, as will be seen from the illustrations of it that were reproduced.

We do not know just what particular metals are used in its construction, but presume that these differ in accordance with the service required of the different parts, the majority, however, doubtless being of a good quality of steel. Nor can we say what the friction rollers are faced with, but have no doubt your communication will fall under the eye of the designer of the transmission, and, unless the matter be a trade secret, further information will be forthcoming which will be published in a later issue.

A New Use for Chromium.

Editor THE AUTOMOBILE:

[776.]—As a repairman in an automobile shop, it struck me sometime ago that metallic chromium would be a very suitable material for the contact points of vibrators or tremblers. The extreme hardness of this metal, its infusibility, and its resistance to corrosion constitute insurance against the three chief troubles that beset the ordinary platinum points—wear, fusing, and tarnishing. I found it impossible by any method I knew to solder or braze the chromium points in place, and because of its hard and brittle nature, and almost complete lack of malleability, I had to file the points out of the solid material. What I wish to know is: Has chromium been previously used in this manner, and is there any better way of working it than that of filing it out? Also, is there any method of soldering or brazing it? Once in place, it seems to give excellent results, though I have experienced some trouble with loosening of poorly secured points.

Waterbury, Conn. HOMER VAN BRUNT.

The account of your experiments is very interesting, and in view of the high price of platinum, and the other well-known unsatisfactory features you mention, it may become a matter of considerable importance. There is no state of chromium, so far as we are able to ascertain, in which it is easy to work, no matter to what temperature it is subjected. We are even surprised that you were able to file it, and should think grinding necessary if the metal you have been using is pure. We also are unable to find any means of soldering it, and should be pleased to hear from any of our readers who can help out with suggestions. If your work has been anticipated, we are unable to recall it, though the writer has an impression that somewhere, a year or so ago, he read something along this line.

The Automobile Plow Again.

Editor THE AUTOMOBILE:

[777.]—Why is it that so little progress is made in the manufacture of motor plows and other motor-driven agricultural machinery, such as planters, sowers, harrows, cultivators, mowing machines, harvesters, etc.? It seems to me that there is a great field, and probably a considerable actual demand, awaiting the appearance of such machinery. No one who has ever had experience in it needs to be told how onerous most classes of farm labor are, and how much to be desired is the machine for displacing the horse, which, despite the length of his service, is in many ways inefficient and inadequate. It is my idea that something on the order of the motor forecarriage or tricar, capable of having attached to it different kinds of trailing apparatus, would be most available, since it could be then "hitched up" to whatever particular duty there might be at hand. Is such a device regarded as impractical, would it be prohibitively expensive, or what is the reason that there are no apparent signs of its coming?

Dallas, Texas. CALVIN A. STARBUCK.

Probably a chief difficulty in the way of the particular progress you seem so earnestly to desire is the fact that the average tract of farm land is more or less hilly, and automobile vehicles of no class operate very well on hills where there are no roads. Some highly successful work has been done, nevertheless, in the direction of what you outline. For example, in England there is the Ivel agricultural motor, which plows, harrows and cultivates, and is in fairly extensive use. In this country, the International Harvester Company people, who now make a "buggy-type" automobile, are understood to have done considerable experimenting with an automobile reaping machine. This machine worked very well, but was never marketed because of a variety of reasons, chief of which were a rather high first cost and a lack of adaptability to rough ground. This was some years ago, and it is altogether probable that a marked commercial success might attend more up-to-date experiments, in which all of the recent progress of the art could be availed of. In Germany and in France, where more automobile pioneering has been done than in other countries, a good many motor vehicles are in use for agricultural purposes and are thoroughly successful. The probabilities are that the future will see much extension of their use and improvements in their qualities, while denatured alcohol very likely will be the fuel—thus giving an incidental but very positive impetus to agricultural enterprise generally. The traction engine, which has been a standard farm appliance for forty years, is a form of agricultural automobile, and in many parts of the west is used to tow gang plows, combined harvesters, and the like.

Wanted—a Forty-Passenger Electric "Rubbernecker."

Editor THE AUTOMOBILE:

[778.]—Will you kindly advise me where to buy a reliable electric 35 or 40-passenger sightseeing car for the least money?

New Orleans, La. TULANE AUTOMOBILE COMPANY, LTD.

This is something that falls outside the province of this department to answer directly, so we have accordingly communicated your inquiry for particulars to the leading makers of this type of vehicle, requesting them to send you the information.

EARLY JUNETIME HAPPENINGS OF THE CLUBS

First Rowe Trophy Contest to Be Held June 15-16.

BALTIMORE, MD., June 3.—The Automobile Club of Maryland, which, by deed of trust, becomes the custodian of the H. M. Rowe touring trophy, has accepted the conditions imposed by the donor, and will carry out the conditions of the gift, which prescribe that there shall be an annual contest of three runs annually, the first of not less than 150 miles, the second of not less than 250 miles, and the third of not less than 400 miles. The winner of the contest for each year shall be that car which has the least number of points scored against it for the three runs comprising the year's quota, but the trophy will remain in the custody of the Automobile Club of Maryland, and the name of the winner of each year's contests will be suitably engraved thereon. The contest for the Rowe trophy is open only to members of the Automobile Club of Maryland, and the first contest for the year 1907 has been set for June 15-16, to Hagerstown and return. The donor is Dr. H. M. Rowe, the club's president.

Details have been completed by the Automobile Club of Maryland for the third annual outing of orphans to be given June 12. One thousand orphans from the various institutions throughout the city will be taken in 200 cars that will be prettily decorated for the occasion. The outing will begin with a short parade through the city and Druid Hill Park, after which the party will go to Electric Park. Various amusements will be participated in by the children at the resort, after which supper will be served. In order to prevent any recklessness on the part of drivers a large detail of officers will go along on the trip.

Texans Plan a 1,000-mile Endurance Contest Across State.

FORT WORTH, TEX., June 1.—Among the features for advertising the State of Texas which the 5,000,000 Club of Texas is planning is a 1,000-mile endurance automobile contest across the State from El Paso to Texarkana, to be held next fall. The club was organized several months ago for the purpose of bringing immigration into Texas, so that the population of the State will reach the 5,000,000 mark by the time of the next government census. The club has the backing of the best business men, and is spending money in a variety of ways to accomplish its purpose, and has set aside $5,000 for the purchase of suitable prizes for the auto contest.

The purpose of the race is to secure the advertising which it is considered will result from the fact that a 1,000-mile race can be run in one direction across a single State. The roads, where there are roads, are only fair, but most of the run will be in a country where the prairie can be used as well as any road. A meeting of the board of governors of the 5,000,000 Club will be held in Fort Worth, June 14 and 15, and it is probable that action on the race will be taken at that time. The route of the race will undoubtedly follow the Texas Pacific Railroad across the State, although there is a chance that the Southern Pacific will be followed from El Paso to Houston, and then the I. G. N. route northeast through the State be taken.

Geneva Automobile Club Holds Its Initial Run.

GENEVA, N. Y., June 3.—Thirty-one cars carrying approximately 100 passengers participated in the first run of the Geneva Automobile Club, held May 28. The trip was to Canandaigua, and was preceded by a short parade through the principal streets of the city. The trip was in the nature of an endurance run, the first prize for which was an automobile clock donated by the Geneva Automobile Company. F. C. Dilman and C. S. Burrall were tied for the prize, both of whom lacked two points of a perfect score under the rules. At Canandaigua a fish supper was indulged in and the return run was made in the evening.

Hartford A. C. Holds Its Orphan Day Run Early.

HARTFORD, CONN., June 3.—Owing to the fact that many members of the Automobile Club of Hartford depart for their summer homes prior to June 12, the date set for the national observance of Orphans' Day by the American Automobile Association, it was decided to celebrate the day on May 25. Fifty-two automobiles were tendered the committee in charge and about 200 children 95 of whom were from the Hartford Orphan Asylum, and the balance from the organized charities of the city, were given an outing. The run extended to Middletown and was in charge of President W. F. Fuller, Vice-president C. H. Gillette and Secretary Guy K. Dustin. On the return to Hartford, about 5 o'clock, lunch was served by Caterer Besse, the Pope Manufacturing Company, the Electric Vehicle Company, the Hartford Rubber Works, the Billings & Spencer Company, the Veeder Manufacturing Company, the Whitlock Coil Pipe Company, Brown, Thomson & Co., the Miner Garage Company and the Palace Automobile Station acting as hosts.

The Automobile Club of Hartford will give an outing yearly to the orphans the latter part of May each year.

Great Racing Enthusiasm at Guadalajara, Mexico.

GUADALAJARA, MEXICO, May 18.—Great enthusiasm is being manifested here over the successful two days' meet which was held May 12-13 under the auspices of the Jalisco Automobile Club, and there is promise that next year's events will rival some of the big races held in the United States. It is proposed to raise a fund of $50,000 to improve the race course, and it is certain that there will be no lack of entries for the meeting. The Pope-Hartford people, whose car won the Jalisco cup at the recent meeting, is sure to be represented, and French, Italian, German, English, and American machines, all of which have representation in Mexico, will be entered to contest for its possession. Particular credit is due to Alfonzo Fernandez Somellera, vice-president of the Jalisco Club, who was the moving spirit in arranging the races, and is the donor of the Jalisco cup.

Harrisburg Club to Have July 4 Climb.

HARRISBURG, PA., June 3.—The Motor Club of Harrisburg is making elaborate arrangements for a hill-climbing contest which will be held on the Fourth of July. The climb will likely take place up Peter's Mountain, which is about ten miles from this city. The hill now being considered is over a mile in length and has several steep grades. Much interest is being shown in the contest and many entries are expected.

The Motor Club has set aside Saturday, June 15, for its annual Orphans' Day. On that day one hundred cars will be put at the disposal of the Exhibition and Runs Committee and the orphans of the six local charitable institutions will be taken a ride over the twenty-four miles of paved streets and out into the country over the city park system.

Detroiters Will Visit Grand Rapids Club.

DETROIT, MICH., June 3.—With winter weather still prevailing, making motoring anything but enjoyable, members of the Detroit Automobile Club are formulating plans for the summer's campaign, under the energetic direction of President Harry Skillman and his associates. The clubhouse at Pine Lake has been given a thorough renovation and was opened for the season on Sunday, May 18. The formal opening will be held some time later, and an all-day's pow-wow is being arranged, with numerous novel features in connection. Runs are also being planned to various points in the State, including a visit to the Grand Rapids Club. New members are being added rapidly.

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Permanent Conditions Existing in Making Autos. Nothing illustrates the settled condition of prosperous solidity to which the American automobile industry as a whole has attained than the set plan of campaign which the established manufacturer has adopted in outlining his year's work. The haphazard conditions that characterized earlier days where both the manufacturing and the selling ends were concerned have given way entirely, and in their place have come system and method which older industries were years in establishing. With the present month both the manufacturing and selling seasons for what are rather ambiguously termed 1907 models, draws to a close, so far as the manufacturer is concerned.

All the material ordered a year or more ago has been converted into the number of automobiles which their maker then undertook preparations to turn out. All but a small proportion of the cars thus built have been delivered to the dealers and have found their way into the hands of their new owners, and within the next thirty days or less the few remaining 1907 models will have traveled the same road, so that June may be said to mark the end of the automobile year, industrially speaking. Of course, not a few makers have anticipated the end of the season by several months, and their engineering departments have been busy with the forerunners of their 1908 product long before there was the slightest cessation of activity on the current models, both departments working concurrently and at full blast. But even those whose facilities have been taxed to the utmost in getting out their product in accordance with a well-defined schedule of deliveries outlined months ahead, will devote their energies to converting the plans for 1908 models that have been in the draughting rooms since last winter, into finished machines.

For the present, there is little change to be anticipated. Models that are new in more than name are promised in several instances, and developments along competitive lines are to be expected where the low-priced car is concerned, and particularly in the runabout class, but there will be little or nothing in the way of radical changes, other than what is already a matter of more or less common knowledge. The 1908 models will be in evidence in numbers within the next sixty to ninety days, but except in the case of the initiated few it will be a difficult matter to distinguish them from their immediate predecessors.

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Automobiling's Extensive List of Events Tells a Story. Thousands attended the big list of events that took place on Decoration Day, and in the daily prints of the following morning more columns were devoted to telling the holiday story of automobiling than ever before in the comparatively brief history of the motor-driven vehicle. Endurance runs, hill climbs, and track races were held in various parts of the country, and the liberal space given for the news of the competitive form of the industry's pastime feature accentuated the widespread interest of the general public. For some time to come, according to our belief, it is a good investment for makers and agents to support in reasonable degree these events which serve to attract a considerable number of people to the wonderful improvement in the automobiles of to-day as compared to the attractive though somewhat uncertain cars of a couple of years ago. The time is near at hand when it will be a difficult matter to outline contests that will extend the automobile within many degrees of its capabilities. Even now there are perplexing ties involving many cars in numerous events, indicating general excellence, but the securing of a single cup winner is scarcely possible except where speed without reference to reliability is the deciding factor, and even then it is often by margins of fractions of seconds. Instead of the endurance of the car, the battle is resolving itself into a test of the physical strength and nerve of the driver, which might bring with it the unfair blaming of a car through the weakening of its pilot and not because of any flaw in its mechanism.

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The Need for Educating the Public. We have been so busy educating the man who has saddled himself with the responsibility of an automobile, or who has exhibited any intention of transforming a handful of banknotes into a glittering machine on four wheels, that we have totally ignored the poor mortal who does not possess, and has no hope of possessing, an auto in any form or shape. As a consequence, the man who has not got an automobile, and does not want one of the "darned things," has made special laws for us with as much wisdom as might be expected from a person knowing absolutely nothing of the subject. Buttonhole any man on the street who chatters glibly of legal limits of eight and ten miles an hour and ask him to indicate what such a rate of travel means. Not one man in a hundred can indicate with any degree of accuracy the speed at which a vehicle is moving, and the percentage is smaller of those who know the relative stopping powers of automobiles, horse vehicles and trolley cars. Yet it is the ninety-nine which make the laws. Because of this vagueness the campaign of a speedometer firm in showing the public at what rates of speed we travel is to be commended. Useful work might be done by trade associations in organizing stopping competitions in some public spot between various types of mechanical and horse-drawn vehicles. The results would astound the public. We should also insist on the incorporation in school curriculums of plain teaching on how to behave in crowded thoroughfares. The need for it is self-evident to any who observe the relation of the pedestrian to drivers in our cities. Rural inhabitants need to be told how to handle horses when brought into contact with automobiles. In some parts of Europe they are so educated by the schoolmaster and by clear, concise advice issued by trade associations.

CHANGES TO BE ASKED IN MARYLAND LAW.

BALTIMORE, MD., June 3.—Members of the Automobile Club of Maryland, together with other owners and dealers in this city and State, have decided upon a number of changes in the automobile laws of Maryland which they will request the next Legislature to make. One of the most important changes desired is the raising of the speed limit from twelve to twenty miles on open roads and to have the present rate of twelve miles an hour prevail on the stretch of those roads that are frequented by vehicles of every description. The autoists will also ask the Legislature to prohibit local or municipal authorities from passing local ordinances which conflict with the State law in regard to speed except in public parks and in the regulation of parades, etc. In some of these localities ordinances have been passed which make it unlawful for any sort of vehicle to go faster than six miles an hour.

The motorists favor a change in the law as it relates to non-residents. The present law says that before coming into this State non-residents must write ahead and get a license in Maryland. In writing for a license the prospective visiting motorist must give a description of his car, send $3—the cost of the license—and send an affidavit to the effect that he knows how to run a machine. Automobilists of this State contend that many visitors stay away from Maryland because of these strict requirements, and that the State may be passed by entirely by the Glidden tour because it has been impossible thus far to make an arrangement to exempt the tourists from taking out Maryland licenses.

Efforts will also be made to provide dealers with a distinguishing number for a license registration, duplicates of the number to be used on all cars while in their possession. Upon the sale of any such motor vehicle the purchaser is required to take out a license in his own name. Under the present law a dealer is required to take out a new license for every new car he purchases before it can be used on the roads for demonstrating.

Purchasers of new cars will also ask to have assigned to them their former registration numbers. Autoists who are pioneers in this State naturally feel proud of that distinction, and if allowed to re-register new cars under the first number taken out by them that pride would be gratified. They would expect to pay for each new registration, their only request being to be allowed to keep the old number.

EXTENDING A PREVIOUS CUSTOMS RULING.

WASHINGTON, D. C., June 3.—The Secretary of the Treasury has informed the Collector of Customs at New York that the regulations of January 31, 1905, providing for the allowance of drawback on the exportation of automobiles manufactured by the Locomobile Company of America, of Bridgeport, Conn., with the use of imported rubber tires to which valves of domestic manufacture are fitted, have been extended, so far as applicable, to cover the exportation of automobiles manufactured by the Pope Manufacturing Company, of Hartford, Conn., with the use of imported tires, in accordance with their sworn statement, dated May 3, 1907, filed with the Collector in New York.

MORE RIGID ENFORCEMENT OF JERSEY LAW.

TRENTON, N. J., June 3.—Commissioner Smith of New Jersey has sent communications to the police departments of the State and the Boards of Freeholders of the different counties urging their co-operation in the enforcement of the automobile law, which recently has suffered many violations. Mr. Smith makes it clear that it is not within the power of his department to perform police duty, and therefore that part of the work must be done by the county authorities. Motorcycles are being spoken of very highly for this work and they have so many advantages in the way of low first cost, economy of maintenance and ease of handling that their adoption is very probable.

GLOBE-GIRDLER GLIDDEN TO BE ON A.A.A. TOUR.

BOSTON, June 3.—Charles J. Glidden, donor of the touring trophy bearing his name, and famous for his many tours in all parts of the world, is very well satisfied with the route as laid out by the A. A. A. touring committee. He has made arrangements for participating in the tour, and has accepted an invitation to accompany the tourists as a guest, though he will not drive a car. Mr. Glidden is somewhat disappointed that the Massachusetts automobilists are taking so little interest in the tour, but he hopes to see entries from clubs of this State.

Tentative plans for continuing his globe-girdling tour of 50,000 miles have been made by Mr. Glidden, and he will start for Europe as soon as the A. A. A. tour is completed. He still needs about 10,000 miles to complete the distance he set out to cover several years ago, and he plans to add several thousand miles this summer in Great Britain and the Continent by making three separate tours.

One of his first notable trips was to cross the Arctic Circle in Sweden several years ago. At that time he desired to travel in Norway, but the restrictions imposed by the authorities were so arduous that he gave up the plan. It was required that he should advertise his route at least six days in advance in the newspapers in the towns along the route he intended to travel, and it was also required that he should have a man on horseback constantly in front of the machine to warn the people of the coming of the automobile. Recently, however, these and the other restrictions which made Norway a practical impossibility for touring, have been removed, and Mr. Glidden has just received a letter from the authorities stating that the restrictions are no more, and inviting him to travel in that country. He has under consideration, therefore, a trip through Norway to the most northerly point, the town of Namsos, about 62 degrees, North latitude. In Sweden he reached 66.33 degrees.

Besides the Norway tour, Mr. Glidden has under consideration a tour from the most southerly point of England, Land's End, to the most northerly point of Scotland, John O'Groat's. The third tour which he is planning is through France to Madrid in Spain, and then across to Lisbon, Portugal.

$9,000 FOR INVENTOR OF NEW FUEL.

PARIS, May 28.—France is searching for a new automobile fuel. The carburant to replace gasoline must be cheaper than the liquid we now use, must be adaptable to present machine without any serious changes and must give good results. It was the Chambre Syndicale de l'Automobile, a purely trade organization, which took up the idea, after noting that gasoline rates have a tendency to rise and that there was even a possibility of a famine before all of us are old men. Brought before the Automobile Club of France, the national body heartily approved of the scheme and immediately added $2,000 to the $1,000 offered by the syndicate. Private members of the A. C. F. announced their willingness to contribute to the prize list, so that at present there are $9,000 in cash for the person producing a fuel equal to gasoline for working purposes, but lower in cost. The Club's Technical Commission has been charged to draw up rules governing the competition and will have charge of the tests.

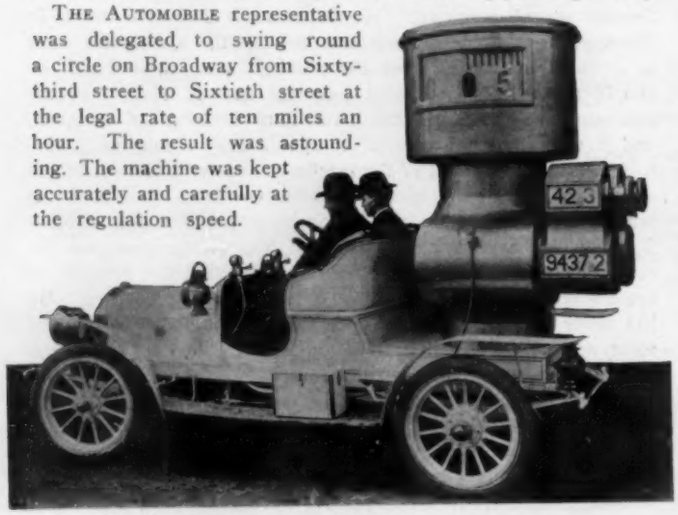
PRIZE WINNERS TO HAVE SHOW PRIVILEGES.

PARIS, May 28.—There will be special glory stands at the decennial Paris Salon for the victors in all the races, endurance tests and competitions organized during the year by the Automobile Club of France. Thus the machine winning the Grand Prix, the victor in the Criterium de France, and the first prize winners in the A. C. F. technical competitions may occupy a select position in the elegant Grand Palais without paying rent. Nearly one hundred entries have already been received for the show, which opens its doors on November 12, more gorgeous and more extensive than ever.

TO PROVE ABSURDITY OF SPEED LAWS.

If the speed laws of New York City were rigorously enforced the entire vehicular traffic would be brought to a standstill. To prove the absurdity of the present rule limiting the speed of automobiles in the city to ten miles an hour, the Warner Instrument Company has produced a giant speed indicator, 10 feet high, 4 feet in diameter, with figures 12 inches in height, mounted on an automobile chassis and driven from the transmission shaft. The accuracy of the instrument has been thoroughly tested, and it is further vouched for by a couple of independent indicators driven from the front wheels of the automobile. Running through the streets of the city the speed of the vehicle is visible to all, the intention of the Warner Company being to show the public the rates of speed of various types of vehicles, and to draw attention to the inconsistencies of the present restrictions. The first public display took place a few days ago in New York City, and was witnessed by a number of newspaper representatives, automobile club officials, and the motoring public generally.

THE AUTOMOBILE representative was delegated to swing round a circle on Broadway from Sixty-third street to Sixtieth street at the legal rate of ten miles an hour. The result was astounding. The machine was kept accurately and carefully at the regulation speed.



GIANT WARNER INDICATOR, THE SPEED LAW REFORMER.

as shown by the indicators, and at that rate of travel was passed by everything on the road excepting the heaviest teams. Every automobile, all the street cars, all buggies, all cabs, were violators of the law. In fact, the only law-abiding users of that particular portion of Broadway were, in addition to the auto carrying the indicator, a five-ton electric truck and two or three heavy teams. Had the police enforced in a wholesale manner the regulations they delight in applying spasmodically, 95 per cent. of the drivers of vehicles on Broadway would have been arrested. Another independent test with the gigantic autometer traveling north on Broadway from Sixty-sixth street at ten miles an hour for a distance of one mile showed that only three horse-drawn vehicles were within the regulation limits. On the other hand, the autometer was passed by three automobiles, four street cars, and three horse vehicles, all violators of the law.

Samuel M. Butler, secretary of the Automobile Club of America, made tests with the machine around the southwest corner of Central Park, Broadway to Fifty-ninth and Sixty-third streets. Owing to the congested nature of the streets, the autometer, whose duty it was to point out the offending drivers, was forced to slack up at times to less than the legal limit of ten miles an hour. However, said Mr. Butler, more than 50 per cent. of vehicles of all classes were violators of the speed laws.

In a conversation after the tests, Mr. Butler declared that the present system of regulating the speed of automobiles is not only anomalous but criminally unjust. "To prove its absurdity," said the A. C. A. secretary, motorists should insist on its strenuous application for a few days; the result would be that the whole vehicular traffic of the city would be brought to a standstill. Further, as at present constituted, the law gives a license to reckless driving, for in certain congested quarters of the city ten miles an hour would be criminal. Legally, however, a man driving at ten miles an hour in a crowded downtown section, where such a rate of speed would obviously be highly dangerous, would be entirely within the law and could not be held responsible for any accident he might cause. Only one solution was possible, namely the abolition of the speed limit, individual responsibility and a thoroughly efficient system of identification for all drivers. The system has been tried in various parts of France with full justice to drivers and all safeguards to the public."

The Warner Instrument Company intends to send the giant speed indicator through all the principal cities of the United States and carry on an active campaign against the present arbitrary speed laws. By educating the public to a more just appreciation of speed, and as a protest against the application of a cast-iron law, it is hoped to pave the way to a more reasonable condition of affairs in the matter of auto legalities.

INFLUENCE OF THE AUTO ON MACHINE DESIGN.

Industrial commentators have been calling attention to the effect the increase in automobile manufacture has had in stimulating other industries, such as tire-making, body-building, upholstering, and so forth, but the most interesting and important phase of this subject is the great progress the automobile has caused in the strictly mechanical field, as represented by the advancement in the making of machine tools, according to James Joyce, the general manager of the American Locomotive Automobile Company, who is a sound authority. Automobile manufacturer represents a mechanical development that reaches far beyond mere design and construction, says Mr. Joyce. To quote him:

"This phase of the progress that has been made, and is now being made, is important because without this remarkable development in machine tools, which has been instigated by the demands of motor car making, the improvement of the automobile to its present standard would not have been possible. There has been a collateral progress in cars and the tools for making them.

"With the evolution of the automobile to a stage of practicability, there began a demand in the factories for varieties of machinery never thought of before, and this demand has continued. Not only have the automobile manufacturers had the best brains in their shops designing new machines for making various parts, but those regularly engaged in the business of making machine tools have been steadily at work in the same direction, so that the best mechanical genius of the period has been concentrated on invention of this sort. The consequent advance in factory machinery has had as much to do with the improvement of the automobile as anything else, especially in respect to attaining accuracy and interchangeability in the parts of cars.

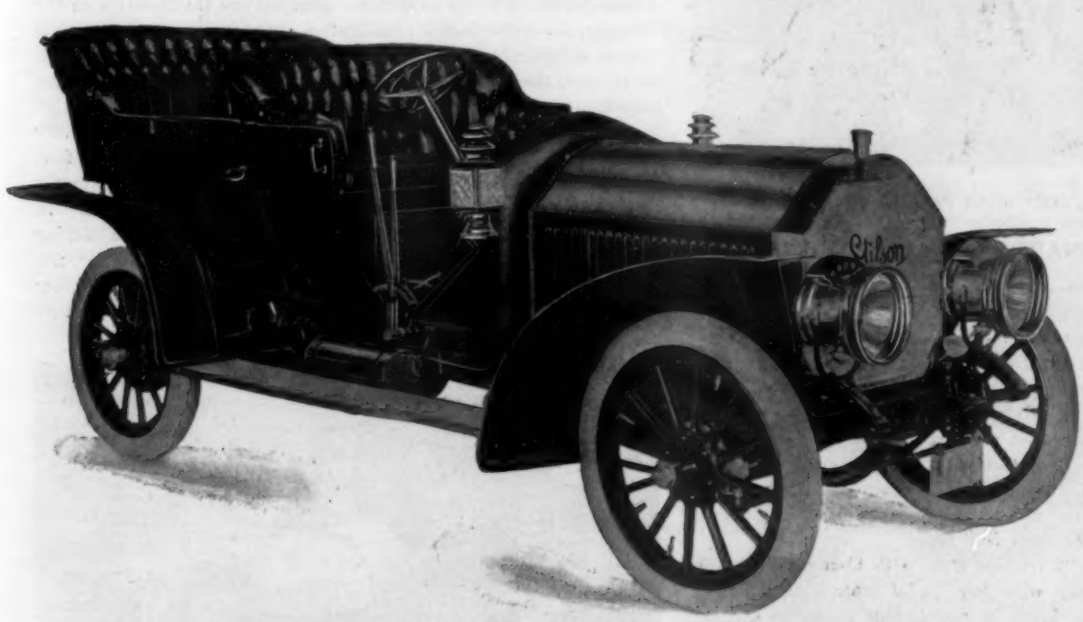
"To enumerate the new tool machines that have been designed to meet the wants of automobile makers would be to give an almost complete inventory of the factory equipment. They are found in every department. The cost of creating and installing these machines has been tremendous, and to those who keep up-to-date, the expense is continuous. The builder of high grade cars cannot balk at any expense, however, for he knows that the future depends upon his product being as nearly perfect as possible.

"In some of this development America has been in advance of Europe, but it is a mistake to think that we use machinery a great deal more than the foreigners do. One of the later inventions in tool work is a machine for grinding cylinders. This is peculiarly an American development, as is another machine for grinding crankshafts, which insures greater accuracy than the lathe work formerly used. On the other hand, we have in the Berliet factory, at Providence, a gear hobbing machine, which cuts gears by a screw-like movement that is infinitesimally precise. This we imported, and there is nothing else like it in this country. We have also at Providence a remarkable milling machine for turning out camshafts, and this is of English design and build.

"The chief respect in which American machine work excels is in the extensive use of jigs and fixtures, by means of which the parts are made in exact replica and are therefore more interchangeable. It is probably true, also, that there has been more new special machinery invented in this country than in all the others put together. Furthermore, it is in the natural course of events that the country which produces the finest and greatest number of machine tool inventions should develop the skilled mechanics to handle them. It is these considerations, in fact, that led the great locomotive concern to do the machining on Berliet cars in their own factory here, while sending to France for the superior materials produced there."

ANOTHER SIX FROM THE OLD BAY STATE

A SILENT six-cylinder 60-horsepower automobile is the unique model produced by the Stilson Motor Car Company, 92 Renne avenue, Pittsfield, Mass. The motive power of the machine is an engine with separately cast vertical water-cooled cylinders, 4 11-16 inches bore and 5 1-2 inches stroke, with interchangeable mushroom type valves on opposite sides. Despite the multiplicity of its cylinders, the engine is particularly compact and the arrangement of piping is such as to give complete accessibility to every working part. The cylinders are mounted on an aluminum crankcase attached to a steel sub-frame, and all gears are completely inclosed and run in oil. Double ignition is provided by a high-tension magneto and by storage battery, spark plugs being in the cylinder heads. The water-cooling system comprises a centrifugal gear-driven pump and a special type cellular radiator of large dimensions and special design. An important matter in six-cylinder engines is the arrangement of the intake piping; this has been carefully worked out on the Stilson, and, as will be seen from the illustration of the intake side of engine, the piping is calculated to give a uniform supply of gas to all cylinders. The carbureter is of the float-feed type and is entirely automatic. Lubrication is provided for by a patent oiling system, the mechanical oiler being gear-driven.



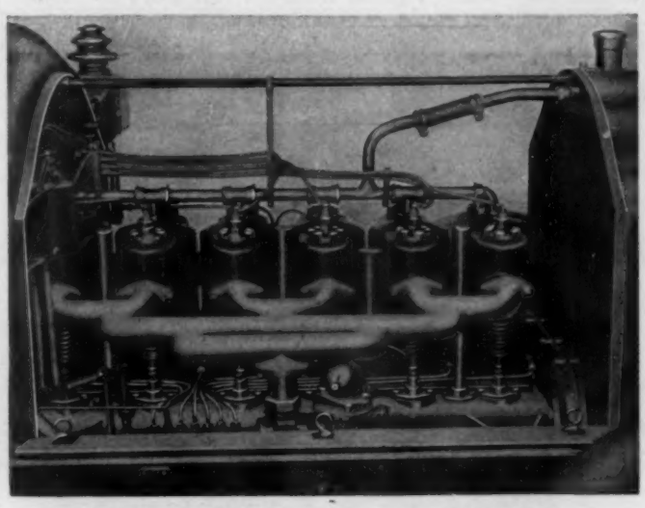
THE 60-HORSEPOWER STILSON SIX-CYLINDER LOOKS LIKE A STURDY NEW ENGLANDER.

Standard lines are followed in the matter of transmission and drive. The clutch is of the cone type with special leather face, sliding gear transmission is of selective type, giving four speeds forward and reverse, with direct drive on the high. Final drive is by bevel gears to floating rear axle, with clutch-driven hub. Ball bearings are used throughout in the transmission.

Steering is irreversible, positively adjustable to wear, with fixed wheel. Spark and throttle levers, placed on top of steering wheel, have stationary segment retaining its position independent of position of the wheel.

The framework of the Stilson "six" is of pressed steel cold rolled, with a sub-frame to carry entire power plant, and a metal dustpan completely protecting all mechanical parts. Extra heavy semi-elliptic springs are employed in front and the rear has the same type of suspension, the springs being extra long. Front axle is of I-beam section, nickel steel, with reversed Elliot type steering knuckles and oil-tempered ball bearings. Both braking systems are on rear wheels, the foot brake operating externally and the emergency brake being of internal expansion type on rear wheel drums, bronze against steel. Thirty-four-inch wheels are carried made of grade A second growth hickory. Wheelbase is 120 inches and tread 56 inches. Any make of American tires may be had with the machine, the dimensions being 34 by 4 inches front and 34 by 4 1-2 inches rear. At the rear of the frame is a 23-gallon gasoline tank, supplying fuel under pressure to the carbureter; a pressure gauge is provided on the dash.

In keeping with the high grade of the mechanical make-up of the automobile is a roomy, comfortable, and well-finished touring body, with easy side entrances. Although a top is not provided on the standard model, the body has received the necessary strengthening irons to allow of it receiving this protection against bad weather. Standard colors are dark red, with light red running gear, trimmed with black. Other color combinations are obtainable when ordered. The curved dash is of cast aluminum of a patented design, there are running footboards and metal mud guards. In the generous equipment are comprised two large acetylene headlights with B. & L. mirrors, generator, two square oil side lamps with red and green stripes on top of glass, rear oil lamp, an autochime operated by foot lever, clock, pump, jack, and full kit of tools and a foot rest. As a powerful family touring car the Stilson "six" has a handsome, comfortable appearance. Fully equipped, the weight of the machine is 2,750 pounds.



RIGHT-HAND SIDE MOTOR SHOWING DESIGN OF INTAKE.

MODEL D ALBANY RUNABOUT WITH FALLING TOP EQUIPMENT.

A BUGGY RUNABOUT FROM INDIANA.

There are four models of the Albany runabout, constructed by the Albany Auto Company, Albany, Ind., designated respectively Models C, B, D, and E. Model C chassis, which is shown below, is the one likely to prove of most interest to the general public and which best serves as a representative of the group.

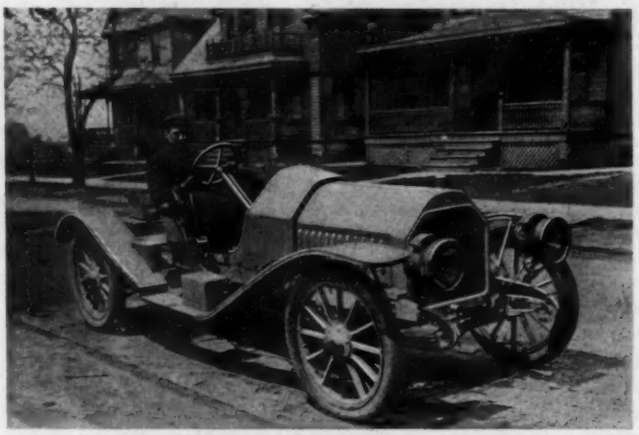
Complete accessibility is obtained by placing the two-cylinder air-cooled vertical engine under a bonnet forward. Of 4-inches bore by 4-inches stroke, it develops 10-12 horsepower, and has mechanical exhaust and automatic intake valves in the head. Ignition is by jump spark, dry batteries being used. The carbureter is of the automatic float feed type.

Transmission is by metal friction disk with fiber-shod friction wheel pushed into contact with foot pedal transmitting power to countershaft, final drive being by double side chains to sprockets on rear road wheels. All speeds are obtainable from two to twenty miles an hour by operation of the hand lever, reverse and emergency brake being obtained by the same lever. On the countershaft an 8-tooth sprocket is used, 36-tooth sprockets being used on the road wheels. Steering is by inclined column operating worm and segment, with connecting bar behind the front axle. Efficient suspension is provided by four full elliptic springs reinforced by a half-elliptic spring under engine. Angle steel, 2 inch by 1-4 inch, is employed for the frame, engine and gear being mounted direct. Wheelbase is 70 inches, tread 50 inches, and weight 800 pounds. Solid cushion tires, 1 1-4-inch, are employed on 30-inch wood wheels, strongly bolted and running on double roller bearings. Both front and rear axles are tubular and undivided, giving a road clearance of full fourteen inches. The body is of poplar, with either oak or hickory framework. The seat is upholstered, with spring cushion and back and a commodious space is left in the rear for carrying packages. Color scheme is black body, machinery aluminum and running gear red or Brewster green. Metal mud guards are provided, and the buggy is completely equipped with lamps, tools, etc., and a folding hood.

DOUBLE CYLINDER CHASSIS OF THE ALBANY RUNABOUT.

DETAILS OF THE NEW STEARNS SIX-CYLINDER.

Among the first of the makers to outline their policy for 1908 where the six-cylinder motor is concerned are the builders of the Stearns, who have had a runabout of this type in hand for some time past, and now that it has more than exceeded expectations in its try-out, the details of the new car are made public, but in the same announcement take pains to make clear their position on this much-mooted point. Actually they do not favor the six-cylinder construction, as the multiplication of the cylinders above four is superfluous, while the gain achieved does not compensate for the greater weight and complication necessarily involved. In short, they are quite content to pin their faith during the coming year on the four-cylinder motor, as they have in the past, but, not to be sidetracked where the increasing demand for a six-cylinder high-powered runabout is concerned, they have decided to enter the ranks in order to meet the wants of those of their customers who are bent on having a six-cylinder car.



THE NEW STEARNS "SIX" LOOKS GOOD.

The new runabout is nominally rated at 45 horsepower, but it is in reality of twice the power, as the new motor has tested up to 90 and 100 horsepower on the brake. The reason will readily be apparent when it is said that the new motor is in practically every respect but a duplication of the standard Stearns motor on a 50 per cent. larger scale. In other words, two additional cylinders of the same size have been added and the features that have hitherto distinguished the Stearns motor have been retained as formerly. The four-cylinder motor is rated at 30-60 horsepower, according to which carbureter of the double system is employed, and consists of four cylinders with a bore and stroke of 5 3-8 by 5 1-2 inches. As the result of considerable study of the problem, the makers have succeeded, with the aid of an additional ball bearing, in mounting a crankshaft capable of delivering 100 horsepower, with possibly a trifle less load per bearing than is the case on the present four-cylinder mounting. A carbureter of the regular multiple jet type, together with a unique design of inlet manifolds, supplies the mixture. The double ignition system, employing a Bosch high-tension magneto on one side and a complete accumulator and coil on the other, is also a feature. Power is transmitted through an expanding band clutch and four speed gear-set of the selective type to the double side-chain drive.

MICHIGAN COMPANY TO BUILD STEAM TRUCKS.

Under the title of the Michigan Steam Motor Company, a firm has been incorporated under the laws of the State of Michigan with a capital of $250,000, to build three and five-ton trucks, using a steam power plant of special design on which the company controls the patent rights. The officers are: J. F. MacPherson, president; R. Jossman, secretary, and R. T. Armstrong, treasurer, and the office and factory, consisting of a four-story brick building with a floor space of 26,000 square feet and independent power plant, are located at Pontiac, Mich.

The distinguishing feature of the vehicles to be built by this concern, the first of which are expected to be ready in July next, is the use of a 50-horsepower eight-cylinder compound steam motor of the Belknap type, although a number of patents are held on the generator and other essentials of the power plant to to be used. The engine itself is very simple in construction, the cylinders being placed according to the twin tandem arrangement, each unit consisting of two cylinders cast integrally and each pair of units being staggered at an angle of 90 degrees on the crankcase, all the valve mechanism being placed between the cylinders, thus making the motor very compact as well as very accessible. The generators are tested to 1,000 pounds by hydraulic pressure, but have been run in tests at 350 pounds, which pressure will doubtless be adhered to. An automatically controlled fuel supply maintains the pressure at any point desired, extinguishing the fire when it rises too high and relighting it when it falls.

MORE TRADE CHANGES AT THE HUB.

Boston, June 3.—A notable change in local trade circles during the past week has been the purchase of the business of the F. T. Kimball Company, of the Motor Mart, agents for the Corbin, by the Corbin Motor Vehicle Corporation, which will continue the agency as the Corbin Car Company of Boston, the new concern having been incorporated under Massachusetts laws with B. B. Bassette president, E. H. Brandt vice-president, E. T. Kimball treasurer, and B. Frank Blaney secretary. The new concern will handle the New England business, and Mr. Blaney has just started on a trip with a car through the territory. He is accompanied by H. E. Wilson, formerly of the Rambler branch, who has just joined the Corbin forces.

V. A. Charles, who has been a salesman at the Thomas B. Jeffery & Co. New England branch, in this city, for several years, has been appointed manager to succeed C. E. Gilmore who recently resigned to become traveling representative of the Knox company, of Springfield. Mr. Charles is well acquainted with the New England trade and with the Rambler product, and is well equipped to look out for Rambler interests.

BIG ADDITION TO THE MORA PLANT.

Newark, N. Y., June 3.—Six acres of ground are being broken for an addition to the plant of the Mora Motor Car Company. The new building, situated alongside the Northern Central Railroad tracks, will be of two-story modern mill construction, 400 feet long, and, in addition to the plant now occupied, will enable the Mora Company to treble its force before fall.

The Racytype Mora Roadster is speedier than first anticipated. Several satisfied owners claim sixty miles per hour is an easy accomplishment.

LOGAN COMPANY INCREASES CAPITALIZATION.

Chillicothe, O., June 3.—The Logan Construction Company, manufacturers of Logan motor cars, has found it necessary to increase its capital stock to $250,000. The Logan company began business some seven years ago with an output of six cars, and to-day it is producing thirty cars a month, and is behind with its orders. While its trucks and light delivery wagons have met with gratifying success, its 20-24-horsepower runabout, which did excellently in the recent Harrisburg endurance run, is finding a ready sale.

THE RAMBLER THAT WAS CONVERTED INTO A "CHEMICAL."

REMODELING A RAMBLER INTO A FIRE ENGINE.

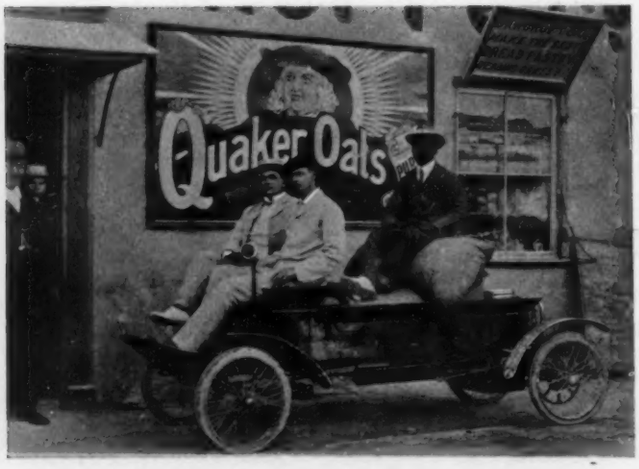
Long Beach, Cal., May 30.—With a desire of being strictly up-to-date, and having nothing readily available to meet their requirements, the fire department of this place hit upon the expedient of attaching a chemical apparatus to the rear deck of a Model 21 Rambler. This car, being regularly fitted with a detachable tonneau, it was only necessary to remove the tonneau, and set the apparatus into place, as shown in the photograph. The outfit, when completed, was put to very rigid tests to compare it with the horse-drawn type. On one occasion it reached a fire, in two minutes from tap of gong, three-quarters of a mile away, over rough streets and railroad crossings.

So successful has this outfit (which weighs 1,000 pounds and carries two men) proven, that the department here is designing several others of a more elaborate form, providing for full complement of firemen, and in some cases more elaborate apparatus. An interesting feature is that the machine was not prepared by the manufacturers of the Rambler, but was designed and adapted to a stock Model 21 chassis by the Long Beach fire department.

"BUFFALO BILL" TRIES AN AUTOMOBILE.

Should Col. W. F. Cody (Buffalo Bill) prove as efficient an auto driver as he is a horseman, automibilists will sit up and take notice when his car goes by. P. A. Williams, Jr., sales manager of the Atlas Motor Car Company, Springfield, Mass., which factory Col. Cody visited while in that city, states that his uncle, George H. A. Williams, of the Abbott-Downing Company, Concord, N. H., built the old stage coach forty years ago that is now used daily in the Wild West show.

COL. WILLIAM F. CODY IN THE 1908 ATLAS RUNABOUT.



F. S. DIMMICK IN HIS WALTHAM-ORIENT AT BRIDGETOWN.

A BIT OF AUTOMOBILING IN BARBADOES.

From the Barbadoes *Advocate*: "On Sunday last Mr. and Mrs. F. S. Dimmick motored out to Beachmont Hotel, Bathsheba, going down by way of Newcastle Hill. In speaking of the work of his car, Mr. Dimmick says that there are some very severe gradients with not the best of surface between New Castle estates and the hotel, but the car took them all cheerfully, even stopping in the middle of one of the steepest to permit a restive horse to be led by, and picking up and continuing without any trouble. The return was by way of Horse Hill, and we believe that this is the first time that an automobile has made the ascent without assistance, to say nothing of carrying its full load all the way, as did Mr. Dimmick's Waltham-Orient. An enthusiastic crowd witnessed the climb, and Mr. Dimmick was informed that all other cars attempting the hill had been either pushed or towed up. The successful accomplishment of such a feat not only demonstrates the great hill-climbing powers of the little car, but shows that its air-cooled motor is up to the hardest kind of work in this tropical climate."

SEATTLE TRIES KNOX AUTO PATROL.

SEATTLE, WASH., June 1.—Seattle's automobile patrol is in action. The car has already made its first run, going into commission last Saturday night, when it did a good day's work, and did all that could be expected of it. The car is a 20-horsepower double-cylinder Knox, and will hold twelve prisoners. The front and sides are screened with heavy nettting. If the patrol proves a success a second will be purchased and placed in service as soon as the manufacturers can supply it.

KNOX AUTO POLICE PATROL IN SERVICE AT SEATTLE.

TRAVELING AUTOMOBILE NEWSPAPER PLANT.

WAUKEGAN, ILL., June 1.—Frank H. Just, a newspaper publisher, has converted a runabout Rambler into a portable newspaper office. He publishes a daily paper in Waukegan and a weekly in Libertyville ten miles distant. Editor Just built a sort of torpedo deck on his machine and inside he carries a number of type galleys. Matter that he uses in his daily is carried over to Libertyville, the galleys fitting in the deck one above another so that they do not disturb one another. Formerly the editor carried the galleys with him on a trolley line, but he finds the auto arrangement a great improvement over the interurban.

Owners of valuable horse-flesh in Lake county have come forth with a queer proposition intended to lessen the danger of horses scaring at automobiles. They claim that the animals take fright at the brilliantly painted cars only. They suggest that cars be painted a uniform color, some subdued hue, brown black or blue. The men who advance this argument say that there are more runaways from red and white painted cars than from any others.

A VETERAN FRANKLIN AND ITS OWNER.

A. B. Case, of Springfield, Mass., owns Franklin automobile 592. Recently he wrote to the maker: "My Franklin 592 has entered upon its fourth year of service. I have had the body

"BENJAMIN FRANKLIN" IN HIS FOUR-YEAR-OLD FRANKLIN.

cleaned and varnished and running gear painted and the machine looks like new." Mr. Case in a recent carnival dressed to represent Benjamin Franklin to quite good effect and with his car made a hit in the procession.

SOME "DON'TS" WORTH REMEMBERING.

From the instruction book of the Peerless Motor Car Company, Cleveland, O., the following excerpt of valuable hints to drivers of cars is taken for the benefit of our readers:

Don't try to start without the switch turned on.

Don't try to start without seeing that the spark lever is retarded.

Don't start motor without first making sure that the speed lever is in neutral position.

Don't try to run without oil, water and gasoline.

Don't crank a motor, that is, don't turn it over the compression, more than three or four times after priming. If it does not start at once there is something wrong.

Don't drive fast around corners; it is dangerous and destructive, especially to tires.

Don't allow an automobile to stand in cold weather with pure water in the circulating system. It will freeze and burst something. In cold weather use some good anti-freezing solution.

Don't run a motor fast when the automobile is standing still; there is no worse abuse.

Don't advance spark lever too fast or too far (crankshafts can be broken by injudicious use of spark advance).

BRITAIN'S CLUB SOLVING THE DUST PROBLEM

By JOSEPH F. MACKLE.

LONDON, May 23.—To-day have commenced some interesting tests organized by the Roads Improvement Association, in conjunction with the Motor Union and the R. A. C. Tar coating of roads has long been known as a satisfactory dust preventative, but the usual method of applying the tar by hand has rendered the work too costly for general adoption. The present trial has for its object the discovery of an efficient machine which will spray the tar into the top crust of the road and bind the surface material together. No less than eight machines have been entered, and preliminary trials have indicated that the work can be done much quicker and at less cost than by former methods, and in consequence a big spread of dust-laying efforts may be looked for. Having found a suitable machine, the right material must be provided and accordingly a second trial is being run to test the respective merits of seven tar preparations which have been brought forward. The present experiments have attracted much attention from road surveyors and similar officials and representatives of these, together with two well-known municipal engineers who have joined the committee, are devoting their efforts to the satisfactory solution of the dust problem—the factor militating most strongly against automobilism at the present time.

But while much can be done in the way of improvement of the highways—which are naturally not in perfect condition after sixty years of comparative disuse—car design is a matter which is much to blame for the present evil. Pressure fuel tanks at the rear have got to go, and in like manner sweeping mudguards must be abolished. Exhaust silencers blowing on the road are also great offenders and a surprisingly large number of cars transgress in this way. Much can be done with a smooth underscreen extending to the rear axle.

To give some definite idea of what is being done in this direction and also, let it be hoped, to point out the glaring offenders, the R. A. C. proposes an interesting trial on the now almost completed three-mile track at Brooklands—the world's first automobile speedway. An even coating of limestone dust will be laid down and the competing cars will be run over this at fixed speeds. Photographic evidence will be taken for the purposes of comparison, which method has been found by previous experience to give entire satisfaction.

Endurance and Reliability Runs.

While there were comparatively few entries for the tourist trophy races, the same lack of interest on the part of the trade is not manifested towards reliability contests. The Irish Automobile Club's event is in progress for the last four days of this week, seventy-five cars running in the various sections over the 600-mile course. For the Scottish Trial at the end of June a still better muster has been obtained and even the total of 105 would have been further increased had not the closing date of entry been strictly observed. Seven cars will uphold America's reputation in this event—two White steamers, two Fords, a Buick, Maxwell, and Cadillac.

The private reliability trial is becoming no less popular than these free-to-all contests, and certainly the publicity gained by a successful run well repays the expense and trouble involved. The victorious Siddeley ran through its allotted 10,000 miles with but one stop, this being an extraordinary mishap in the shape of a broken change-speed lever. The six-cylinder Hotchkiss, fresh from its long French tour, set off immediately to break this record and after reaching its 12,000th mile on English roads has now started to explore Ireland, incidentally going through the Irish Club's Trial. Later on the Scottish Trial will be essayed and thereafter the car will go on running till something happens.

The White steamer and the six-cylinder Rolls-Royce also have just concluded an 1,800 miles observed run without trouble, the route taking these rivals to the heart of Scotland and back. Contrary to expectation, it turns out that this is not the widely announced contest which (it is said) is going to finally settle the vexed steam vs. gasoline engine question, but is merely a friendly encounter preparatory to the trial proper, which will come off in early autumn.

Show Exhibitors Object to Uniform Decorations.

At the present season of road contests it is a far cry to the shows, but it may be of interest to note that the proposed scheme of uniform stand decoration at the next Olympia exhibition has been dropped. The storm of discussion aroused by the idea foreboded its eventual abandonment, for while those firms which formerly spent large sums on striking decoration objected to their loss of distinction, the other parties who cared not for such glitter loudly cried out against the big expense of the proposed scheme. Hence this year's show, which is dated for November 11-23, will be as variegated as ever. A timely denunciation of the auto-cad who amuses himself with sirens and exhaust cut-outs has been issued by the R. A. C. committee.

ENGLAND RETAINS THE TOURIST TROPHY.

DOUGLAS, ISLE OF MAN, May 30.—Britain's most important automobile contest, the race for the Tourist Trophy, has resulted in a victory for the Rover machine, driven by E. Courtis. The heavy touring car race, run on the same course and at the same time, was won by another English machine, a 30-horsepower Beeston-Humber, driven by G. P. Mills.

Owing to a drenching rain the roads were exceedingly slippery and mishaps to valuable cars were as a consequence somewhat numerous. The authorities were so impressed with the bad nature of the road that the heavy cars were allowed an extra gallon of gasoline. The course was from Quarter Bridge, Douglas, to Peel, via Union Mills, Crosby and Ballacraine; from Peel, via Coat road through St. Germains to Ramsey and then back to Douglas over a mountain road to Snaefell. Six rounds of the course had to be made by the light cars, giving a distance of 241:5 miles; the heavy cars had to go round five times.

There were twenty-three machines in the Tourist Trophy class, thirteen of them being British, and nine in the heavy touring car race, six being English and three French. At the commencement of the last round six cars had a winning chance. Three miles from home A. Lee Guinness, driving an 18-horsepower Darracq, appeared a likely winner, but victory was robbed from him by his gasoline supply running out. Only four cars finished on their gasoline allowance, two in each class. They were in the light class a 20-horsepower Rover (E. Curtis), 8:23:27; 16-20-horsepower Beeston-Humber (James Reid), 8:35:17-1. In the heavy class the two finishers were a 30-horsepower Beeston-Humber (G. P. Mills), 7:11:1, and a 25-horsepower Gladiator (G. Fenton), 7:31:35:1. The average speed of the winner is about 28:2 miles an hour, compared with nearly forty miles an

FRENCH VICTORIOUS IN ISLE OF MAN HILL CLIMB

In the hill climbing competition for the *Graphic* trophy, J. E. Hutton's 60-horsepower Berliet was first in 3:40-2, J. Watson's Berliet being second in 3:45-3. Third position was taken by the English Daimler, owned by T. Henshaw, its time being 3:50-4. The contest was held on Slein Lewaigne Hill, near Ramsey, where the course has a gradient of 141 yards in 2,500 yards. The total length of the course was two miles three furlongs, and the steepest part a rise of one in twelve a mile before the finishing point. Vehicles had to be of touring type and carry four passengers. There were fourteen entries.

HOW ALBERT CLEMENT MET HIS DEATH.

PARIS, May 24.—From an examination of the spot on which Albert Clément met his death while training on the Dieppe circuit for the Grand Prix, with a Bayard-Clément machine, it appears that he took an easy turn at too wide an angle. At sixty miles an hour his car ran off the road onto the wide, grassy border. After running over this for nearly fifty yards, it was just about to straighten out to regain the middle of the road when the front wheels struck a bank of earth. Gauderman was thrown out, but Clément was carried along a prisoner in the car, which jumped twenty-five meters, fell across the road and rolled over twice. Clément suffered a fracture of the skull and of the vertebral column and expired a few minutes after.

Gauderman, who was riding with Clément at the time, and who had a miraculous escape, gives the following account of the disaster:

"We left Londinieres at seven o'clock in the morning, Albert Clément driving the machine with which he was third last year in the Grand Prix, and which I was to drive in the coming event. He was thus perfectly familiar with the car. The morning was exceptionally cold, and when we stopped at Eu to take a bowl of hot coffee, Clément bought a pair of heavy gloves and slipped a newspaper under his jersey to protect his chest. While we were here Gabriel and Rougier, who had left Londinieres behind us, passed on a touring car. On starting out again Albert said 'We will catch up Gabriel.' I am certain that Albert Clément was preoccupied or distracted immediately before the accident. Thus, although it was the machine he had driven last year, I noticed that he persisted in remaining in third speed. After Triel, on a straight stretch of road, he said:

"'The machine is not pulling this morning.'

"'Well, you are running on third.'

"'So I am,' he replied.

"Albert then put in his fourth, and it was on this gear that we entered the fatal turn at Saint-Martin-en-Campagne. Albert missed his turn. This is the only cause of the accident. He took the turn too wide, and in an instant was on the grassy border. We did not skid, nor did the car drift. At this moment there was no sense of danger; we did not even feel any shock from the two ditches we passed over, and of which so much has been spoken. We did not even notice the large blocks of wood which we grazed in our passage. Suddenly there was a violent shock. We had struck a bank of sand, which, being covered with grass, was not visible at any distance. I was thrown out, but I distinctly saw the car pass under me, Albert carried along with it. When I recovered consciousness Albert was dead, crushed under the car, which had turned over twenty-five meters away and was a complete wreck."

Albert Clément's funeral service was held at Saint-Pierre-de-Neuilly, the church in which his sister was married to Ferdinand Charron but three weeks ago. A subscription list has been opened for the erection of a monument to his memory.

ANOTHER GRAND PRIX CANDIDATE KILLED.

PARIS, May 30.—While driving the 120-horsepower Darracq racer originally intended for Wagner in the Grand Prix, Marius Pin entered into collision with a horse vehicle between Epernon and Rambouillet, and was killed almost instantly. The accident was caused by the horse taking fright and obstructing the road. M. Hériot, proprietor of the Louvre department store in the Rue de Rivoli, Paris, bought the machine from the Darracq Company only a few days ago, with the intention of running it in the Grand Prix with his chauffeur Pin as driver. The front part of the machine was smashed, but the engine and transmission escaped injury.

Although M. Pin had never driven in auto races, he has always been connected with powerful cars. In 1903 he was Janatzy's mechanic in the Paris-Madrid race. Last year he gained a little notoriety as the hero of an event in which an American family figured. Having missed the special boat train from Paris to Cherbourg, two American ladies, who had booked their passage on a transatlantic steamship, endeavored to charter an automobile to carry them to the seaport. Several of the firms to whom they made their pressing demand refused the journey. Finally, C. M. Charley, of Mercedes interests, offered his private 90-horsepower Mercedes, with Pin as driver. Although the express train had got an advance of more than an hour, Pin raced out with the automobile, and reached Cherbourg a few minutes ahead of the train, thus securing for the ladies a journey across the Atlantic as originally intended.

A.L.A.M. MAKES SHOW PLANS AND TALKS ROADS.

Tuesday was managers' day at the Association of Licensed Automobile Manufacturers headquarters, for there was an all-day session of the Board of Managers, which held its semi-annual meeting in New York. As the chief results of its work, the demonstrating car will no longer be a feature of the Garden show, and motorcycles will be admitted to take their place with the cars, being placed in the commercial vehicle section. Demonstrations are not to be eliminated altogether, but they will be taken care of henceforth by local agencies from their own establishments. Owing to the resignation of Carlton R. Malbey from the show committee, Marcus I. Brock was reappointed a member of it, having retired but a few months ago.

Next to show matters, good roads came in for considerable attention, and the board appropriated $5,000 to be used in furthering the cause, at the discretion of a good roads committee to be appointed later. E. R. Thomas, S. T. Davis, Jr., Albert L. Pope, Thomas Henderson, H. A. Gillis, and R. D. Chapin expressed their views on the question at length, Mr. Thomas being particularly enthusiastic. The committee will work in conjunction with that of the American Motor Car Manufacturers' Association and other organizations throughout the country. The handbook committee—W. E. Metzger, L. H. Kittredge and Thomas Henderson, announced that the 1908 handbook would be ready for distribution at the show. Those present at the meeting were:

Elmer Apperson, Apperson Bros. Automobile Company; H. A. Gillis and H. M. Coale, Autocar Company; W. C. Durant, Buick Motor Company; William E. Metzger, Cadillac Motor Car Company; E. H. Brandt, Corbin Motor Vehicle Corporation; M. J. Budlong, Electric Vehicle Company; J. H. Becker, Elmore Manufacturing Company; H. H. Franklin and G. H. Stilwell, H. H. Franklin Manufacturing Company; C. H. Haynes, W. M. Haynes and C. C. Cartwright, Haynes Automobile Company; E. R. Hewitt, Hewitt Motor Company; E. H. Cutler, Knox Automobile Company; S. T. Davis, Jr., and A. W. Robinson, Locomobile Company of America; H. A. Lozier and Edward Lozier, Lozier Motor Company; C. W. Matheson, Matheson Motor Car Company; V. M. Gunderson, Northern Motor Car Company; Angus Smith, Olds Motor Works; H. B. Joy and S. D. Waldon, Packard Motor Car Company; E. H. Parkhurst, Peerless Motor Car Company; Charles Clifton, George N. Pierce Company; George Pope and C. E. Walker, Pope Manufacturing Company; Albert L. Pope, W. C. Walker and A. E. Schnaf, Pope Motor Car Company; E. D. Shurmer, Royal Motor Car Company; Alden Sampson, 2d, Edwin McEwen, F. B. Stearns Company; C. C. Hildebrand, Stevens Arms & Tool Company; W. R. Innis and T. W. Goodridge, Studebaker Automobile Company; E. R. Thomas and R. D. Chapin, E. R. Thomas Motor Company; Fred Kuser, Walter Automobile Company; E. B. Chalfant and E. S. Church, Waltham Manufacturing Company; Thomas Henderson, Winton Motor Carriage Company.

DARRACQ MACHINES WILL ALL RACE.

PARIS, May 27.—All is now settled regarding the Darracq racers built for this season's international contests. The Darracq Company maintains its decision not to race officially as a protest against Wagner passing over to Fiat. M. Raoul d'Arnaud has bought the machine which should have been in Wagner's hands and has selected Caillois to drive it in the Grand Prix. M. Hériot, son of Commandant Hériot of the French army, has bought another and will place his own mechanic, Marius Pin, in charge of it for the race on the Dieppe Circuit. The third one has been bought by a private individual who will engage Demogeot as driver, or Théry if possible.

For the German Emperor's race the three machines have been bought by Vincenzo Florio, M. Brenda, a French sportsman living in Germany, and an Italian sportsman who hides his identity under the name of d'Ollorip. These three machines will also compete in the Brescia Circuit in northern Italy.

OUR STRENUOUS CHIEF EXECUTIVE RIDES IN A REO.

For probably the third or fourth time in his life, President Roosevelt utilized the automobile as a means of conveyance, being driven out to the State Agricultural College at Lansing in a Reo with Secretary Loeb and R. E. Olds.

NEW YORK STATE "BLUE BOOK" READY.

Another of the three volumes of "The Automobile Official A. A. A. Blue Book" for 1907 has made its appearance. The second to be issued, it bears the title Volume I. and deals with New York State and Canada, with extension routes to and from the Middle West. No time or expense has been spared to supply reliable information on the districts dealt with and the constant changes in highway improvement, making the inferior road of to-day the best to-morrow, have received close attention.

As a convenience to users, a number of New Jersey routes have been included, giving the principal connections from New York to the mainland and shore lines of that State. A convenient arrangement is a preface map showing the entire country dealt with in Volume I., with figures in circles referring to the title pages of sections in the book. Much new work has been done in indicating automobile routes in the Middle West, twenty-four of the most important being outlined in clearer and better form than ever before. Special pains, too, have been taken with city maps in the West; even when it was not always possible to obtain a complete and accurate description of the highways, the routes into and through Western towns have always been prepared with perfect accuracy.

The tabular pages on automobile laws and regulations have been revised and made correct up to the time of sending the volume to press. Steamship connections to New England, Atlantic ports and the West Indies are also presented in convenient tabular form, and information on European regulations is given in the same manner. Hudson river boat lines and ferries are dealt with both tabularly and by diagram maps. The Blue Book is published by the Class Journal Company, publishers of THE AUTOMOBILE, Flatiron Building, New York City.

NATURAL RUBBER HAS A NEW RIVAL.

Harry B. Cox, a Hartford, Conn., chemist, claims to have discovered, after long laboratory researches, a substitute for natural rubber. The new substance, to which the name Halcox has been given, has a close similarity with natural rubber, can be compounded as readily as the natural gum, and can be vulcanized or cured with even greater facility. Its most important advantage is that it can be produced in any required consistency—liquid, semi-liquid, plastic, or stiffer if required. With Halcox it is claimed that there is no variation in product, each lot being identical in make-up and consistency. Cost of manufacture will allow Halcox to be produced at a lower figure than crude rubber can be worked up into a saleable form, and it is said to be capable of quick production in large quantities.

ILLINOIS NOW HAS NEW AUTO LAW.

SPRINGFIELD, ILL., June 3.—Illinois at last has a State automobile law, which places the regulation of this form of transportation entirely in the hands of the State authorities. The bill providing for the regulation of automobiling by the State became a law at midnight last Friday, without the Governor's signature, the necessary ten days having elapsed since it was placed in the hands of the Executive after having passed both branches of the Legislature. The new law will be placed upon the statute books and become effective July 1 next.

In brief, the law requires that all owners of motor vehicles must secure a license from the Secretary of State; provides for State registration and numbering of machines; defines and fixes speed limits; fixes rules of the road; provides for the registration of chauffeurs; registration of manufacturers and dealers; excepts non-residents from registration under certain conditions; in addition to numerous other minor regulations, fixes the fines which are to be collected for violations of the act.

The law is highly acceptable for the most part to automobile owners throughout the State, and was championed vigorously by the Illinois State Automobile Association. At many times it appeared as though it would fail of passage through the opposition of country members who were hostile to the section taking away the power of regulating automobiles from municipalities.

Two years ago a similar measure was vetoed by Governor Deneen, but the present bill was so drawn as to obviate all objections contained in the Governor's veto message on the subject. As the present measure was finally passed by practically a two-thirds vote of the Forty-fifth General Assembly, and as the only objection was the section taking away the power of municipalities to regulate, meeting all other objections which have been raised to the former automobile measure, the Governor permitted it to become a law without his signature.

NEWS OF THE LONG-PROMISED FRENCH CABS.

The gasoline taximeter cabs which the New York Transportation Company has solemnly promised to bestow on the city before the end of the year will be a mixed company, principally from the Delahaye and De Dion Bouton factories in France and the Maxwell works in this country. The first batch of nine Delahayes are expected to be here very shortly, and further consignments will arrive at monthly intervals. A number of these vehicles are at present in use in Paris and London. They are equipped with a four-cylinder 18-horsepower engine carried forward on a pressed steel frame, have three speeds forward and reverse, and shaft drive. A plain but elegant landaulet body, which can be completely open in summer, will be supplied with the machines by a Parisian body builder.

E. R. THOMAS TRIES OUT A VANDERBILT CUP RACER.

With George S. Salzman at the wheel, E. R. Thomas, the Buffalo manufacturer, put one of the racers he is building to annex the Vanderbilt cup, through its paces at Kenilworth Park near Buffalo on Memorial Day.

CLEVELAND'S HUSTLING CLUB IS BUSY.

CLEVELAND, O., June 3.—The Cleveland Automobile Club has made extensive preparations for its annual hill climb, to be held Saturday of this week on Gates Mill hill. The hill has been improved and graded to allow for high speed at all points. One point of advantage about this contest is that there will be no long waits and the contests will be run off in rapid succession. This is possible owing to the fact that the cars do not return by way of the hill, but run back to the starting point by another route.

Steam cars will not be barred at Gates Mill, as they were at Wilkes Barre, and in the open events, as well as in the price classes, they will be permitted to compete against the gasoline cars. There will probably be two or three special events for electrics, as two or three makers have expressed their intention of entering cars of this type.

The touring committee of the Cleveland Automobile Club has arranged for a club tour, July 3 to 10, inclusive, to Watkins Glens, N. Y. The route selected by the committee is through Buffalo, Dansville and Bath, passing the New York State fish hatcheries near Hammondsport. The run is about 800 miles round trip over some of the best roads in this section of the country. The tourists on Saturday and Sunday will be the guests of the Seneca Yacht Club.

The Cleveland Automobile Club has secured within $5,000 of the amount needed to complete the model road, which the club proposes to build on the Euclid road between East Cleveland and Wickliffe.

The Cleveland Automobile Club has appointed a committee to devise ways and means for the entertainment of the A. A. A. tourists who will congregate in Cleveland a day or two before the start of the tour from Cleveland, July 10. This committee consists of George Collister, Walter C. Baker and Asa Goddard.

RUNS OF THE MINNESOTA ASSOCIATION.

MINNEAPOLIS, MINN., June 3.—An endurance run will be held under the auspices of the Minnesota State Automobile Association late in July, if present plans materialize. The affair will be known as the "Little Glidden Tour," and the route will be between the Twin Cities and Superior, Wis., and Duluth, Minn. Frank M. Joyce, president of the Minnesota Association, has been over the proposed route and believes it to be a splendid route for such a test. In places there is enough sand to make the best of machines show the mettle they are made of.

The first tour of the Minnesota Association will be held June 22, when a run from St. Paul and Minneapolis will be made to Mankato, where the quarterly meeting of the Minnesota body will be held. On the way down the route will include the towns of Shakopee, Jordan and St. Peter. The return will be made via Waterville, Faribault and Waseca. The distance each way is 125 miles. The trip will be in charge of George H. Daggett, chairman of the State Touring Committee, and a member of a like committee of the National Association.

CARS WANTED FOR NEW YORK ORPHANS.

Automobilists of the Metropolitan district who want the opportunity of doing a most kindly act have an eleventh-hour chance by notifying S. A. Miles, No. 7 East Forty-second street, that their cars are at the disposal of the Orphans' Day Committee of the New York Motor Club, whose event will take place on Wednesday, June 12. Though the club has obtained over a hundred cars, it needs at least a score more in order to provide for the generous number of orphans which it hopes to entertain by a ride to Coney Island, a visit to the wonders of Dreamland, and a feast that will be appreciated by many hungry little mouths. Therefore, after reading this appeal, notify Mr. Miles at once by letter or telephone—his telephone is 4868-38th—that your car is available bright and early on the morning of June 12.

ENTRIES FOR SEALED BONNET CONTEST.

Routes for the four-day contest to be held under the auspices of the Automobile Club of America on June 19 to 22, inclusive, having been decided upon, the contest committee and the Bureau of Tours are busy surveying and preparing road directions. Four different routes of 150 miles each have been selected. The first day's run is along the Hudson to Poughkeepsie and return; the second up the Harlem valley, through White Plains, Mt. Kisco, Pauling and return; the third along the Sound to West Haven and return, and the fourth to Bridgeport, returning via Danbury, Pauling and the Harlem valley, as on the second day. The high-powered runabouts will have to travel twenty-five miles more per day than touring cars in the same class, but will follow the same routes, with the additional run to cover each day.

Fourteen cars have already been entered in two classes, those in Class A, composed of cars selling for more than $3,000, being the American Locomotive Company, one Berliet touring car; Lozier Motor Company, two Lozier touring cars; Locomobile Company of America, three Locomobile touring cars; Wyckoff, Church & Partridge, one Stearns touring car. In Class B, which includes all cars selling between $1,500 and $3,000, the following have been entered: George J. Scott Motor Company, one Glide touring car; A. M. Day, one Elmore touring car; Locomobile Company of America, three Locomobile touring cars; Atlantic Motor Car Company, one Stoddard-Dayton touring car and one Stoddard-Dayton runabout. The entries will close with the contest committee at the clubhouse on Wednesday, June 12.

BUFFALO CLUB AFTER COUNTRYHOUSE.

BUFFALO, N. Y., June 3.—The Buffalo Automobile Club is negotiating for the purchase of the Larkin homestead on the north end of Lock street in the city of Lockport. The property is owned by Henry Steiner, but the club, it is said, desires to have the place remodeled and usued for club runs from Buffalo to Lockport over the new Transit Road. The consideration asked is in the neighborhood of $10,000. The house is a handsome one on the colonial style, situated on a high ridge, and overlooks the vast plain extending to Lake Ontario.

Fifty new members to the roster of the Automobile Club are expected to be added soon. That number of applications was received up to yesterday, and it was only a month ago the members elected sixty-six new automobilists.

President White has appointed a committee of ten from the club membership to serve as special police officers. The committee will be sworn in this week by the Police Commissioners.

DETROIT TO HAVE SEALED BONNET EVENT.

DETROIT, MICH., June 3.—June 15 is the date set by the Detroit Automobile Club for the first extended run of the season, at which time a 100-mile non-stop contest will be pulled off. Starting from this city, an angling course will be followed, the race ending at the club's quarters at Pine Lake. Prizes will be awarded the winners in the three classes established, one division being for cars weighing over 3,000 pounds, another for those between 1,500 and 3,000 pounds, and the third for those under 1,500 pounds. All hoods will be sealed and wired before the start, and no repairs, adjustments or replenishments of any kind, save tires, will be permitted. Entries are coming in at a rapid rate, and a spirited contest is promised.

SCHOOLEY'S MOUNTAIN CLIMB ON JULY 4.

It is practically arranged that there will be a climb of Schooley's Mountain, N. J., on July 4, and conducted under the management of the energetic W. J. Morgan, who has secured permission for the holding of the contest, which will be limited to stock cars. Schooley's Mountain is about fifty miles from Newark, and within five miles of Hackettstown. The course will be about 1½ miles, and the mountain road will be extensively repaired.

JERSEYMEN ORGANIZE GARAGE ASSOCIATION.

ASBURY PARK, N. J., June 3.—Automobile dealers in this vicinity have organized the Seashore Garage Association, with headquarters in this city, for the purpose of equalizing garage and charging rates and formulating a uniform price list for supplies and accessories. Membership will be sought with the New York association.

At a meeting in Eagle Hall last week the association was formed, representative automobile men from Lakewood, Spring Lake, Belmar, Long Branch, Elberon, Deal, and Asbury Park being present. C. R. Zacharias, of Asbury Park, was elected chairman, and Robert W. Boone, of this city, secretary. A committee consisting of Charles Keene, of Deal; Mr. Strummel, of South Elberon, and J. H. Johnson, of Spring Lake, was appointed to formulate a constitution and set of by-laws. A committee on rules consists of Joseph B. Hoff and John H. Aaring, of Lakewood, and E. J. Harrington and Mark Guy, of this city. A banquet followed the meeting.

AMERICAN NAPIER COMPANY REORGANIZES.

Under date of June 3 the incorporation of the Napier Company of America in Boston is reported. No facts or figures as to the details of the reorganization of the company that has been building Napier cars in this country for several years past, and which recently went to the wall, are made public, other than the bare statement that the company has been incorporated with this title under the laws of Massachusetts. The capital is $200,000 and the officers are: President and treasurer, Otto B. Cole, Boston; clerk, Hugh W. Ogden, Brookline. The only apparent connection between the new regime and the old is to be found in the fact that Mr. Ogden figured as attorney for Vice-President Farnsworth of the old company, who was appointed its receiver in bankruptcy. The former concern was known as the Napier Motor Car Company of America, and was capitalized at $600,000, but whether it ever made or sold any cars, except in the immediate vicinity, does not appear.

TWENTY-NINE IN ONE DAY 200-MILE TEST.

At 6 o'clock this morning the first of the twenty-nine cars engaged in the New York Motor Club's 200-mile run was sent away along the Hudson river road to Poughkeepsie. The others followed at intervals of one minute. From Poughkeepsie the route of the run is through Millbrook, Amenia, and Lakeville, to the Berkshire Hills, and then via Salisbury, Great Barrington, and Lenox to Pittsfield. From this point the course is eastward to Chatham, thence northward to Albany. Following is a list of the competitors in the order in which they were started:

1, Frayer-Miller, H. H. Knepper; 2, Corbin, James Swan; 3, Dragon, John Haynes; 4, Stoddard-Dayton, Ray Howard; 5, Knox, H. M. Davis; 6, Mora, F. Cimiotti, 7, American, H. E. Trevor; 8, Continental, C. S. Johnston; 9, Lozier, H. Michner, 10, Welch, E. L. De Camp; 11, Haynes, C. B. Warren; 12, Pope-Hartford, Phil Haines; 14, Berliet, P. J. Johnson; 15, Pope-Toledo, Joe Judge; 16, Stearns, W. I. Fickling; 17, Premier, C. C. Singer; 18, Glide, J. C. McCafferty; 19, Franklin, R. G. Howell; 20, Pierce, J. S. Williams; 21, White, R. B. Mann; 22, Aerocar, A. M. Robbins; 23, Maxwell, Chas. Fleming; 24, Corbin, John Dower; 25, Mitchell, E. W. Hudson; 26, Stoddard-Dayton, R. Newton; 27, Dragon, A. L. Kull; 28, Darracq, S. B. Stevens, Jr.; 29, Corbin, Jim Corbett; 30, Reo, B. L. Luckwood.

BAKER ELECTRIC PASSES CENTURY MARK.

CLEVELAND, O., June 3.—The Baker Motor Vehicle Company has never made any very great claims for high mileage radius of its electric vehicles, but last week, to satisfy a doubter, the Price Brothers' Carriage Company, Cleveland agents for the Baker, made a test run with a standard Baker victoria fitted with a standard Exide 9 m.v. 24-cell stock battery, a car which had been in continuous service for four months without attention, and covered 101.6 miles with one charge. Much of the run was over unpaved streets and a number of grades were encountered.

DETROIT'S AUTO PLANTS ARE STILL BUSY.

DETROIT, MICH., June 3.—The lassitude usually making its appearance at this season of the year in the automobile industry, and which increases as the summer months advance, is little in evidence among Detroit plants. On the contrary, unwonted activity is to be found in a majority of instances. Several reasons may be given for this condition of affairs. That there will be more cars than ever before marketed in a single season has been determined beyond a question of doubt. At the same time, the backward spring has held up shipments to an appreciable degree, the man who contemplates purchasing a car preferring to wait until the weather offers some inducements to motorists.

Nor has this proved an unmixed blessing. Far-sighted manufacturers were quick to note the changed conditions, and governed their course accordingly. Heretofore a majority of the local plants have been forced to run nights for a portion of the time to meet the rush. This season there has been little or none of this overtime work, the even trend of affairs permitting that attention to every detail that is so essential in the production of a high-grade automobile. The additional expense incurred in working longer hours has been eliminated, the factories have operated steadily to date, with the prospects encouraging for a continuation of activities taking the place of the customary spasmodic spurts, followed by a dull period, and from every standpoint the situation is regarded as much more encouraging than was the case even a few weeks earlier.

RUSHMORE TO HAVE UNIQUE POWER PLANT.

After having constantly extended its old plant until there was no ground left to expand further, the Rushmore Dynamo Works has found it necessary to have still more room and have broken ground for new buildings, the main one of which will be 250 by 50 feet, two stories high. Though the addition is to be of the most advanced type of modern factory construction, interest centers in the new power plant. It is a type more or less well known in Europe, but this is to be the first of its kind here, at least in connection with the automobile accessory business, and the town of Plainfield, N. J., where the plant is situated, will take on new interest by reason of its location there.

The power house, which will be a separate building, measuring 50 by 50 feet, will contain a 200-horsepower, twin-cylinder horizontal Koerting gas engine, direct-connected to a large generator, the drive throughout being electric on the group system, except in the case of heavy units, which will be direct-driven by electric motors. The engine and generator unit will weigh in the neighborhood of 80,000 pounds, and there will be a similar 75-horsepower unit for use in emergencies and to take care of occasional overloads, the plans including provision for a duplicate of the large unit in the future. A ten-ton electric crane will span the engine room and will facilitate the installation of the machinery as well as its handling when repairs are needed.

Gas will be supplied by two anthracite producers, one of 250 horsepower and the other of 75 horsepower, the gas also being used for heating the furnaces of various kinds used in the plant, while the buildings will be warmed by a forced hot-water circulation of the cooling water from the engine jackets. The temperature of this water will be raised considerably by being passed through a special form of boiler utilizing the hot exhaust gases direct from the engine. There will also be a complete brass foundry, measuring 50 by 50 feet, and as it is the intention to run both the old and the new plants at full blast, they will be connected by a light gauge railway running through all the departments.

The new power plant is calculated to effect an economy of three-fourths the coal ordinarily required to run the same amount of machinery, and as lens grinding calls for a great deal of power, there will be a great reduction in the cost of manufacture. The complete factory will represent an investment of $100,000 and will be the most elaborate of its kind in the world.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

Mrs. H. A. Lozier will drive her Lozier car in the Orphans Day parade, to be given under the auspices of the New York Motor Club, June 12.

The Tuxedo (N. Y.) Park Association is now running a line of auto 'buses from its clubhouse to the railway station. Seven cars are in service. Charles Allen, formerly with the Maxwell-Briscoe Company, has charge of the cars and the garage.

A 40-50-horsepower six-cylinder Rolls-Royce car is to take part in this year's A. A. A. tour for the Glidden cup, one of these cars having been ordered from the Rolls-Royce Import Company, of New York, by a customer, expressly for this purpose.—*The Automotor Journal* (Eng.)

French papers received state that all the winners in the Targa-Florio Cup race abroad, which included the Fiat, Itala and DeDietrich, were equipped with Truffault-Hartford shock absorbers, which are now included as regular equipment on seventeen different makes of cars sold in this country.

York (Pa.) automobilists are interested in a novel event which is now well underway for a twenty-four-hour non-stop contest which is to be held during the latter part of July. James A. Kline, general manager of the York Motor Car Company, manufacturers of the Pullman automobiles, is one of the originators of the run, and plans are now being completed.

A line of coupés, especially for the use of physicians, is nearing completion in the Winton factory at Cleveland. The body is modeled after the coupé that Mr. Winton has had in his personal service for more than a year. The body encloses the steering wheel, the dash and its equipment and the seats, affording the fullest protection from the weather to driver and passenger.

An interesting test of carrying thirteen passengers up Corey hill, Boston, was made in a 20-horsepower Maxwell touring car, May 11, and gave to the Ajax tires, with which the car was equipped, a pretty tough proposition to handle, from which they emerged with flying colors. The tires were 30x3 1-2, and the whole outfit weighed over two tons. The distance was 500 yards, on a grade varying from 12 to 18 per cent.

May was another record-breaking month for the registration of automobiles at Albany, there being 2,209 registered during that period. Of this number, 172 were imported cars. The leader in registrations was Ford, there being almost twice as many of that make registered as any other. The total of Fords were 222. Next in order comes the Cadillac, with 143, and close to it the Maxwell with 140 registrations.

The new form B odometer of the Veeder Manufacturing Company is not equipped with trip indicator, as would be inferred from a perusal of a notice concerning same that appeared in our issue of May 16, page 841. Its new feature is a simplified universal attaching fixture, so made that any owner can readily adjust the fittings to his own car. Veeder instruments show total mileage up to 10,000 miles, and some models also show the separate distance of each trip, the trip figures being reset to zero before the start without disturbing the totals.

The White Company has just issued the third of its series of route books, which are for free distribution to all tourists. This new issue is devoted to the main touring route between New York and Boston. Complete and accurate road directions are given for traveling over this important route in either direction. The route directions are copiously illustrated, and, in addition, there is a fine double-page map. Copies of White Route Book No. 3, and of the two previous issues, may be obtained on application to The White Company, Cleveland, Ohio, or to any of its branches or agencies.

Ohio's town, "where the rubber tires come from," which everyone knows means Akron, is as progressive as its tire makers, for it has had an automobile patrol wagon for the past eight years. The latter was a pioneer in this field, as it was the first of its kind in the country. Now it is about to be supplanted by something more modern in the shape of a Reo 16-horsepower gasoline car. The order was awarded to the Reo Motor Car Company, of Lansing, Mich., through their local agent, M. S. Long, at Akron, and the chassis is being built according to specification. The body will be that ordinarily employed on the Reo 'buses and will have a seating capacity of ten people.

The Salisbury Wheel & Manufacturing Company of Jamestown, N. Y., has issued invitations for its second annual house party and outing, which will be held in the Lakewood Country Club at Lakewood, on Chautauqua lake, during the week of June 29-July6. The invitations have been sent to the patrons of the company and to automobile manufacturers and others interested in the business. The members of the "Steering" Committee are Clare A. Pickard, Scott H. Penfield, Erwin D. Shearman and Fletcher Goodwill, all good entertainers. The program will include fishing, boating, motoring, steamboat trips and the Country Club golf links will also be at the disposal of the guests during their stay.

In the description of the Auto-Light which appeared in THE AUTOMOBILE of May 2, it was erroneously stated that this device, which is a clever and simple arrangement for lighting the lamps from the seat, was used in connection with the ignition system of the car. The makers state that this is not the case, as two years' experience in so using it has demonstrated beyond any question that such interconnection does not give satisfactory service, one of the reasons being that the average autoist is prone to blame the Auto-Light for trouble arising in the ignition system, even where nothing more serious than a sooted plug is at fault. Consequently, they have made the device entirely self-contained; it consists of the sparking attachment for the burners, a small dashboard coil with an ingenious switch, and the necessary primary and secondary connections. To light the lamps, the gas is turned on and the switch moved first to one point and then the other, an automatic attachment preventing a short circuit in case the driver should omit to open the switch after both lamps are lighted, so that there is no danger of ruining the batteries by permitting the sparking to continue at the points when the operation of lighting is completed.

Headed by Pierce Schenck, of the Dayton Malleable Iron Company, of Dayton, O., a company has been recently organized to give Dayton its second automobile manufacturing plant. Mr. Schenk is one of Dayton's pioneer autoists, and is considered quite an authority on automobile construction. The new company has acquired four acres of land, together with the factory of the Dayton Machine Tool Company, at Edgemont, and will devote its attention to the manufacture of both six and four-cylinder cars, but particularly the former. The Rutenber motor will be used. The title of the new concern is to be the Speedwell Motor Car Company, which was incorporated last week with a capital of $50,000, the organizers being Pierce Schenck, H. C. Barnes, J. A. McMahon, J. Sprigg McMahon and B. B. Etter, all of Dayton. It is intended to only turn out a few cars this season, but preparations will be made for a large business for next year.

RECENT TRADE REMOVALS.

The Boston Gear Works has removed to its new and commodious factory at Norfolk Downs, a few miles south of the Boston city limits, where ample facilities for its largely increased business are to be had. The Boston office and storage facilities at 102 High street, corner Congress street, are retained.

The C. G. V. Import Company is now permanently located in its new building, 1849 Broadway, at Sixty-first street, New York City, where ample space permits a fine display of cars. The garage and storage facilities enable the company to import C. G. V. cars in such numbers that immediate deliveries can be made customers. A reception room for customers adjoins the offices on the second floor.

NEW AGENCIES ESTABLISHED.

The Capitol Hill Garage, 615 B street, Southeast, Washington, D. C., operated by James J. Flynn, has been appointed agent for the Rambler and Mitchell cars in that city.

H. T. Cruger has been appointed agent for the Ford at Waco, Texas. He is located at 615-17 Franklin street, having purchased the plant and salesrooms of the Banning Machinery Company, which he succeeds.

The J. Stevens Arms & Tool Company, of Chicopee Falls, Mass., will open a branch store in Boston for the sale of Stevens-Duryeas next season. This car has been represented at the Hub in the past by the late F. E. Randall.

Among the new agencies recently established by the Rainier Company is one for the State of Texas, in charge of H. H. Lewis, Jr., who will be located in Fort Worth and who will be the first agent to take on the Rainier cars in this territory.

The Wayne Motor Company is the style of the new concern which will handle the Wayne cars for Chicago and

vicinity. The company is composed of Chicago men, and Otis Friend, formerly with the Chicago Mitchell agency, has been appointed manager. Space has been leased from the Branstetter Motor Company, at 1337 Michigan avenue, where headquarters will be made. Jesse Draper, sales manager of the Wayne Automobile Company, of Detroit, recently completed final arrangements for the transfer of the agency from the W. W. Shaw Company to the new concern.

PERSONAL TRADE MENTION.

J. N. Merwin, sales manager for the Forest City Motor Company, Massillon, O., is visiting the eastern agents of the Jewel car.

R. B. Jacobs is to manage the automobile and accessories show which will be held at Foot Guard Armory, Hartford, Conn., March 23-28, 1908.

Chester E. Clemens, formerly connected with the Napier Motor Company of Boston, as designer and engineer, is now with the automobile department of the St. Louis Car Company, St. Louis, Mo.

Walter Clapp, Jr., formerly connected with the Boston Rambler branch, has accepted the position of manager of the Hartford Rubber Works Company's branch at Buffalo, entering upon his duties June 1.

S. H. Baker, who has been manager of the F. E. Randall estate, which represents the Stevens-Duryea in Boston, has resigned his position to enter the local trade as agent for a line of cars, as soon as he can conclude arrangements.

George H. Strout, of the sales department of the Electric Vehicle Company, of Hartford, Conn., is making a trip among the Columbia dealers in southern territory. He reports trade conditions in the cities he has so far visited as particularly encouraging.

Chas. G. Percival, for the past three years with the Linscott Motor Company, of Boston, has resigned and will enter the local trade in that city with an agency for one of the leading Western cars, the details of which will be announced later.

Mark C. O'Connor has been appointed purchasing agent for the Forest City Motor Company, Massillon, O. He was for several years with the purchasing department of the Waverley department of the Pope Motor Car Company, Indianapolis, and later with the Marion Motor Car Company, of that city.

C. S. Pelton, who has been with the B. F. Goodrich Company for the past five years—three at the factory and two at Pittsburg, Pa.—has been appointed manager of the Buffalo branch of the Pennsylvania Rubber Company. Fred Roblin, who has had charge of the Buffalo branch temporarily, will return to the tire department of the Pennsylvania company's plant, at Jeannette, Pa.

Charles Bates, for several years manager of the Frederick E. Randall estate agency of the Stevens-Duryea cars in Boston, who left that position last year to become superintendent of the Bay State Automobile Company, makers of the Bay State Forty, has just rejoined his old connections. Mr. Bates is an Englishman, and has long been identified with the automobile industry on both sides of the Atlantic, having been associated with the English Daimler Company before coming to Boston.

TWO NEW MOSLER PLUGS.

The makers of the "Spitfire" plugs, A. R. Mosler & Co., 163 West Twenty-ninth street, New York, announce that they are now manufacturing a line of plugs patterned after the recently adopted standard of the Association of Licensed Automobile Manufacturers. This is a 7-8 inch plug with 18 threads to the inch. They are also introducing two new plugs, to be known as the Mosler Triumph and the "Beat-M-All." Both are of the open-end type, with deep recesses, and have the same effective porcelain insulation as the Spitfire. Some idea of the extent to which the Mosler factory is being pushed is shown by its single order for 300 ounces of platinum.

THE "COLBURN SKYSCRAPER."

It was not so very long since that Colorado was not considered a particularly good place for automobiles, much less for manufacturing them, but conditions have changed and probably the State can now boast as many cars in proportion to its population as any other. This year she is going to turn out some of her own cars. The Colburn Automobile Company, of Denver, is to be the sponsor and the production is to be known as the Colburn Skyscraper. Unlike many of the projects that come out of the West, this is not of the usual gigantic proportions. The new company is modest—it is only going to set out to build fifty cars this year—but it is going to build them well. Next year it will do better on numbers.

The car is to be a four-cylinder 25-horsepower vehicle with a sliding-gear transmission, using the selective type of operation, and having four forward speeds, with the direct drive on the third. The motor is to have all the valves in the head operated by a single superimposed camshaft; a duplicate system of ignition will be employed, using a high-tension magneto and accumulators. The clutch will be of the conical type, with cork inserts, and the final drive will be by double side chain. Timken roller bearings will be employed on the running gear and D. W. F. ball bearings in the change-speed gearbox, the latter having chrome nickel-steel gears. With full equipment, including top, the car will list at $3,250.

NEW TRADE PUBLICATIONS.

An illustrated catalogue from the American Motor Company, Brockton, Mass., presents a complete description of the Marsh-Metz motorcycle and its use as a tricar for pleasure or delivery purposes.

A terse talk on electric automobiles to those who know or want to know is the subject matter of a booklet published by Oliver P. Fritchle, under the title "What I Am Doing and Why." The publication, which deals with Fritchle electric vehicles, can be obtained from the firm's headquarters at 1449-1455 Clarkson street, Denver, Col.

In connection with the Jamestown Aeronautical Congress a handbook has been produced by the Department of Congress and Special Events, with offices at 12 East Forty-second street, New York, dealing generally with the aero section of the Jamestown exhibition. In addition it gives a complete list of officers, a list of the ascensions made in the United States by members of the Aero Club, a list of aeronautical prizes, etc.

From the Coppock Motor Car Company has been sent forth an illustrated catalogue of the Coppock model A one-ton truck driven by a three-port two-cycle gasoline motor. The application of the two-cycle to commercial vehicles offers a considerable amount of interest, and the booklet should be in demand among present or prospective users of automobiles for commercial purposes. It can be obtained from the company's headquarters at Marion, Ind.

The two-engine automobile manufactured by the Carter Motor Car Company, Detroit, Mich., has as its distinctive feature two independent gasoline engines, each having either two, four, or six cylinders, and each one capable of being used independently or together. There being always a complete power plant in reserve, the danger of being stalled on the road is entirely removed. Full particulars of the machine are to be found in the booklet just published under the title "Carter Two-Engine Automobile."

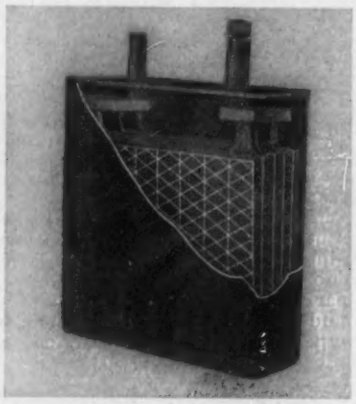
It is an interesting, racy monologue that is presented between the covers of the little brochure issued by the American Motor Car Company, with the title "Two in a Roadster." The writer has dropped the usual shriek of the advertising man, and tells his little story in a manner interesting to all, while the excellent vignettes on every page carry you along with him and give an additional interest to the narrative. Finally, if you are so disposed, you can study the make-up of the car around which the writer has spun his romance, in three or four pages at the end of the booklet.

"A Treatise on Marine Gasoline Engines" is more than an ordinary trade catalogue, for it comprises a lengthy description of the marine engine in general and the Ferro marine engine in particular. Of more than sixty large illustrated pages, it describes every part of the marine gas engine in detail and shows several of the processes of production. The book should be received with interest by all motor boat men. A smaller publication also from the Ferro Machine & Foundry Company, of Cleveland, gives detailed instructions for the care and working of Ferro marine engines. It is a practical, useful publication. These two books will be sent postpaid to any address upon receipt of ten cents.

"A Study in Graphite" is the title of a recent booklet published by the Joseph Dixon Crucible Company and one that will make special appeal to the inquiring mind. It gives in detail a series of tests of graphite made by Professor W. F. M. Goss, of Purdue University. These tests were not made with a view to finding points for or against graphite, but were conducted in the spirit of scientific research. The study opens with a dissertation by Prof. Goss based upon the conclusions drawn from the results of the tests. Then follow complete descriptions of the tests together with illustrations of the testing machine made from photographs and drawings. The condition of the bearings and journal is shown by photographs taken at different stages. A limited number of copies will be distributed free of charge to all those interested in the science of graphite lubrication. Address the Joseph Dixon Crucible Company, Jersey City, N. J.

INFORMATION FOR AUTO USERS.

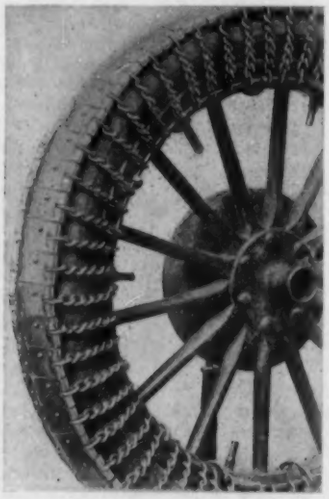
Syracuse Storage Battery.—This storage battery, guaranteed for one year by the Syracuse Auto Supply Company, 118-120 State street, Syracuse, N. Y., is built upon standard accepted principles and em-



THE SYRACUSE STORAGE BATTERY.

bodies all the necessary requirements to make a light-weight, powerful and durable battery. The pasted type of plate, employing the reinforced staggard grid, is used. The active material is specially prepared to produce the highest capacity per pound weight. The cells are encased in a compact quartered oak box with hard rubber top and heavy nickeled handles and guards.

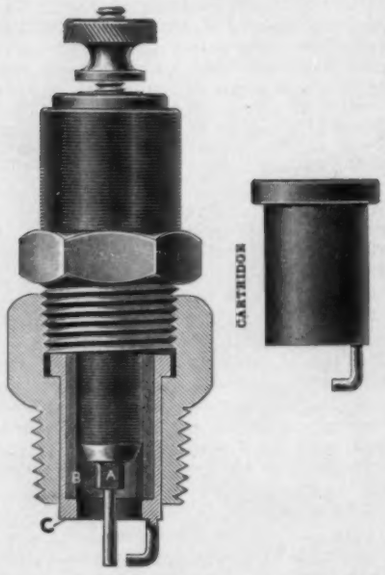
An Automobile Tire Protector.—Manufactured by the Perfect Tire Company, Rock Rapids, Iowa, the cover here illustrated consists of steel plates two inches



"PERFECT" TIRE PROTECTOR.

wide, ovaled so as to fit the tread of the tire, and lined with a belting which holds them together and comes in contact with the tire. The plates are wide enough to protrude slightly over the width of the tread, the chains holding the plates to the tread barely touching the sides of the tire. These chains are held to the wheel by a band ring with turn buckles, so that it can be loosened or tightened at will. The cover can be taken off or put on in 15 minutes.

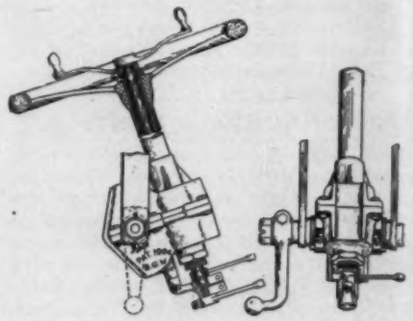
A Renewable-point Spark Plug.—The feature of the Wiley spark plug, manufactured by the Hub Lubricator Company, 78 Portland street, Boston, Mass., is that the point can be renewed by replacing the cartridge *C* by a new one, and by changing the point *A*. The plug is made of best selected mica, double insulated, and will



WILEY SPARK PLUG IN SECTION.

not short circuit. It is claimed that with this form of construction the Wiley is equivalent to two plugs and therefore an economical commodity that will commend itself to auto users.

Safety Steering Device.—After three years experience on high-grade cars, the Boston Gear Works of Norfolk Downs, Wollaston, Mass., offers a safety steering device of the worm-gear type. The worm is made of machinery steel, and the sector is of best quality drop forged steel, both case-hardened 1-32 inch. The casings enclosing the working parts are cast in two pieces, an upper and a lower, bolted together. They can be either cast-iron or a special hardened aluminum. Bearings are long and are made of bronze. When parts are screwed together large diameters and fine threads are used, making a strong and reliable connection. The sector shaft is of steel, and, if desired, can be made in one piece with crank. The bushings in which the sector shaft runs are eccentric, allowing the taking up of any wear which may occur. The other adjustment, that of end play in the steering post, is also taken up by a nut on the bottom end of the steering post. The hanging of this device is a rather unique arrangement, the



WORM-GEAR SAFETY STEERING DEVICE.

sector shaft being made long and steel straps with bronze bushings holding the device in place. These supports can be made any length to suit conditions of car. By this method the device may be hung so as to give either a fore and aft or side motion of the crank.

Annable Pneumatic Auto-Spring.—Claims made for the Annable pneumatic auto-spring, manufactured by the Annable Pneumatic Spring Company, at Detroit, Mich., are that it will carry a car of any weight with as big a load as can be put into it on 13 pounds pressure to the square inch, compared with 70 pounds pressure for a pneumatic tire. The machine is suspended on air under slight pressure confined in cushions placed between the car body and the running gear. The four cushions are united by air tubes which admit of free play between each unit, and these are all connected to an air reservoir containing the same cubical volume of air and the same initial pressure as the cushions and tubes. Opening into this reservoir is a specially devised valve and a by-pass. When the cushions are violently depressed they are relieved of excess pressure by the air instantly passing into the reservoir through the valve, immediately afterwards returning to the tubes and cushions through the by-pass, but with graduated force.

Briscoe Radiator Reasons.—"Because on every order of any size we make duplicate working patterns and keep one set in each plant as insurance against fire, strike or breakdown; because we have our own brass foundry, our own machine shop; make our own tools, dies, tubes, etc.; because we have two plants, one east, one west, with duplicate equipment," and last but not least, "because we have studied radiators scientifically, experimentally and practically for the past seven years," are some of the reasons given by the Briscoe Mfg. Co., of Detroit, Mich., and Newark, N. J., on their new mailing card just issued.

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